

BID DOCUMENTS AND SPECIFICATIONS FOR
BRACKETT ELEMENTARY SCHOOL
PLAYGROUND
Arlington, MA

INVITATION FOR BIDS
IFB # 24-15

May 22, 2024

Prepared by:

Warner Larson Landscape Architects
Boston, Massachusetts

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**SECTION 00 10 00
INVITATION TO BID**

BRACKETT ELEMENTARY SCHOOL PLAYGROUND

BID #24-15

Sealed bids for:

Brackett Elementary School Playground (hereinafter the "Project")

In accordance with the Bidding and Contract Documents prepared by:

Warner Larson Landscape Architects
130 West Broadway
Boston, MA 02127

will be received by:

TOWN OF ARLINGTON acting through its Town Manager,

hereinafter called the "Town", at the Office of the Town Manager/Purchasing Department, Robbins Memorial Town Hall Annex – 2nd Floor, 730 Massachusetts Avenue, Arlington, MA 02476, no later than the time and date specified below, at which time and place they will be publicly opened and read aloud. Any bid received after the time and date specified will be set aside and not considered.

Bid documents will be available on the Town of Arlington website www.arlingtonma.gov/purchasing. Bidding procedures and award of the contract shall be in accordance with the applicable provisions of M.G.L. c.30, §39M, as amended, and c.149, §§44A through 44L, inclusive, as amended.

An optional pre-bid conference will take place on Thursday, May 30, 2024, at 11:00 a.m. at the site (66 Eastern Ave, Arlington, MA). Questions may be addressed to the Designer until 4:00 p.m. on May 31, 2024. Contractors should have visited the site prior to submitting questions. A written addendum answering questions will be issued if necessary.

General Bids due: **June 6, 2024, 2:00 p.m.**
Office of the Town Manager/Purchasing Department
Robbins Memorial Town Hall Annex – 2nd floor
730 Massachusetts Avenue, Arlington, MA 02476

In general, the Project consists of renovation of the playground, basketball court, kindergarten play area, and outdoor learning spaces at the Brackett Elementary School, 66 Eastern Ave,

Arlington, MA. Materials include vehicular asphalt, asphalt walkway surfacing, porous asphalt, poured-in-place rubber surfacing, mulch, engineered wood fiber, painted graphics on asphalt with sealcoat surface, seeded lawn, site furnishings, and play equipment. Some equipment is to be furnished by the Town. Add alternates for 1) skim coat PIP rubber surfacing on porous asphalt and 2) installation of spinner and associated engineered wood fiber surfacing and rubber are included.

The work of the Project is to begin on or about July 1, 2024, and be brought to final completion by November 20, 2024.

A bid deposit in an amount not less than five percent (5%) of the Bid amount, including any and all alternates, shall be submitted with each Bid. Bid deposits shall be in the form of a) cash, b) a Certified Check on, or a Treasurer's or Cashier's Check issued by, a responsible bank or trust company and payable to the Town of Arlington, or c) a bid bond in a form satisfactory to the Town, with a surety company qualified to do business in the Commonwealth of Massachusetts and conditioned upon faithful performance by the principal of the agreements contained in the Bid. Return of bid deposits will be in accordance with the provisions of the applicable General Laws.

The Town will reject any Bid when required to do so by the above referenced General Laws. In addition, the Owner reserves the right to waive any informalities in bidding and to reject any and all bids if it deems it to be in the public interest so to do.

The successful bidder will be required to furnish a Labor and Materials or Payment Bond in an amount equal to 50% of the total contract price. Such bond shall be of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts.

Wages and contributions to be paid employees on the Project shall not be less than those established by the Director of the Department of Labor Standards of the Commonwealth of Massachusetts in accordance with M.G.L. c.149, §§ 26 to 27H inclusive. The wage sheets applicable to this project are included in the bid documents.

The Town of Arlington is exempt from sales tax, for which reason Bidders should not include sales taxes in figuring or in reference to any bid.

No bidder may withdraw his bid for a period of sixty (45) days, excluding Saturdays, Sundays and legal holidays, after the actual date of the opening thereof.

James Feeney, Town Manager
TOWN OF ARLINGTON, MASSACHUSETTS
May 22, 2024

**SECTION 00 20 00
INSTRUCTIONS TO BIDDERS**

1. RECEIPT AND OPENING OF BIDS

Sealed bids, on bid forms furnished for that purpose, will be received at the Town Manager's Office, Town Hall Annex – 2nd Floor, 730 Massachusetts Ave, Arlington, MA 02476, until **2:00 p.m. on June 6, 2024**, at which time they will be publicly opened and read aloud. Any bid received after the time and date specified shall not be considered.

The Town may consider unresponsive any bid not prepared and submitted in accordance with the provisions specified in the bid documents and may waive any informalities in or reject any and all bids.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. No bidder may withdraw a bid within forty-five (45) days after the actual date of the opening thereof.

2. PREPARATION OF BIDS

Each bid must be submitted on the bid form attached hereto. A Certificate of Non-Collusion and any and all additional forms specified herein must be attached to the sealed bid. All blank spaces for bid prices must be filled in, written in ink or typewritten, in both words and figures, and all of the foregoing forms and certificates must be fully completed and executed when submitted. Bids shall be submitted with **one original** and **one copy**.

Each bid must be submitted in a sealed envelope bearing on the outside the name, address and telephone number of the bidder and the bid number and name of the project for which the bid is submitted. If delivered by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Office of the Town Manager/Purchasing Department, Town Hall Annex – 2nd Floor, 730 Massachusetts Ave, Arlington, MA 02476.

3. CONTRACT AWARD

The Town will award the contract to the lowest eligible and responsible bidder within forty-five (45) days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids provided that, at the time this contract is to be awarded, the lowest bid submitted by a responsive and responsible bidder, including any or all accepted alternates, does not exceed the amount of funds available to finance the Project. If the lowest bid exceeds said amount, the Town may reject all bids.

4. MODIFICATION OF BIDS

Any bidder may modify his bid by written communication at any time prior to the scheduled closing time for receipt of bids. The bidder may modify his bid by telegraphic communication provided such telegraphic communication is received by the Town prior to the closing time and provided further the Town is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time.

The modification communication shall not reveal the bid price but shall provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Town until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

5. QUALIFICATIONS OF BIDDER

No award will be made to any bidder who cannot satisfy the Town that it has sufficient ability and experience in this class of work and sufficient capital and plant to enable it to prosecute and complete the work successfully within the time specified. The Town's decision or judgment on these matters will be final, conclusive, and binding to the fullest extent permitted by law.

The Town may make such investigations as it deems necessary, and the bidder shall furnish to the Town, under oath if so required, all such information and data for this purpose as the Town may request. The Town reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Town that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

6. BID SECURITY

Each bid shall be accompanied by a bid deposit equal to five percent (5%) of the value of the total bid, including any and all alternates. The bid deposit shall be in the form of (a) cash, (b) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank and payable to the Town or (c) a bid bond in a form satisfactory to the Town, with a surety company qualified to do business in the Commonwealth of Massachusetts and conditioned upon the faithful performance by the principal of the agreements contained in the bid.

All bid deposits, except those of the three lowest responsible and eligible bidders, will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after the bid opening. The bid deposits of the three lowest responsible and eligible bidders will be returned upon the execution and delivery of the contract or, if no award is made, upon the expiration of forty-five (45) days, Saturdays, Sundays and legal holidays excluded.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

If within ten (10) days after receiving notice of the acceptance of his bid the successful bidder fails or refuses to execute and deliver a contract and furnish any performance or payment bonds required therein, his bid deposit shall, except as otherwise provided by applicable law, become and be the property of the Town, as liquidated damages.

8. TIME OF COMPLETION

The successful bidder must agree to commence and complete the work of the Project in accordance with the dates to be specified in a written "Notice to Proceed".

9. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of its obligation to furnish all material and labor necessary to carry out the provisions of the contract. Insofar as possible, the Contractor, in carrying out the work of the Project, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally, and if provided orally, shall not be relied upon by bidders unless confirmed in a written addendum.

Every request for such interpretation shall be in writing (typed, not handwritten) and sent via email to Amy Allen at aallen@warnerlarson.com and to be given consideration must be received on or before the date and time specified for such requests in the Invitation to Bid.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, when issued, may be viewed and downloaded at www.arlingtonma.gov/purchasing. Bidders are solely responsible for obtaining addenda before the bid opening and each bidder must confirm for himself that he has received all addenda. Failure to acknowledge each and every addendum in the spaces provided on the Bid form may result in rejection of that bidder's bid. Failure of any bidder to receive any such addenda or interpretation shall not relieve such bidder from any obligations under his bid as submitted. All addenda so issued shall become part of the bid and contract documents.

11. PAYMENT BOND

Simultaneously with his delivery of the executed contract, the selected contractor shall furnish a surety bond in the amount of fifty percent (50%) of the total contract price

for the payment of all persons performing labor and materials under this contract. The surety on such bond shall be a surety company qualified to do business under the laws of the Commonwealth and be satisfactory to the Town. The premiums for such bond shall be paid by the Contractor and included in the bid price. The bond shall remain in force for one year after final acceptance of the work by the Town, unless the Town, in writing, releases the Contractor from the obligation sooner.

12. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their powers of attorney.

13. CORI AND SORI REQUIREMENTS

The bidder awarded the contract must provide to the Town of Arlington signed CORI and SORI release forms for each and every person who will be working on site where children are located or as otherwise may be required.

14. LAWS AND REGULATIONS

The attention of bidders is directed to the fact that all applicable State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

15. OBLIGATION OF BIDDER

At the time of the opening of bids it is presumed that each bidder has inspected the site and has read and is thoroughly familiar with the plans and Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

16. SALES TAX

Materials and equipment purchased for permanent installation in the Project will be exempt from the Massachusetts Sales and Use Tax. The exemption certificate number will be furnished to the Contractor. Each bidder shall take this exemption into account in calculating his bid and shall not include any sales tax.

17. NON-DISCRIMINATION IN EMPLOYMENT AND EQUAL OPPORTUNITY

Contract for work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract.

The successful bidder must be prepared to comply in all respects where applicable with Article 16 of Title 1 of the Town Bylaws regarding Women Work Force Participation and Equal Opportunity Goal Compliance.

18. BIDDER CERTIFICATION - OSHA TRAINING

Massachusetts law requires that all employees who work on Massachusetts public works construction sites have no less than 10 hours of OSHA-approved safety and health training. See M.G.L. c.30, §39M(c), M.G.L. c.30, §39S(a)(1), M.G.L. c.149, §44E(2), and M.G.L. c.149, §44F(2). This requirement will apply to any bid submitted.

This law directs the Massachusetts Attorney General to restrain the award of construction contracts to any contractor who is in violation of this requirement and to restrain the performance of these contracts by non-complying contractors.

All Bidders must certify on the Bid Form compliance with the applicable requirement. Non-compliance with this law will disqualify the Bidder.

19. PREVAILING WAGE RATES

Prevailing Wage Rates as determined by the Director of the Department of Labor Standards under the provisions M.G.L. c.149, §§ 26 to 27H apply to the Project. It is the responsibility of the bidder, before the bid opening, to request, if necessary, any additional information on Prevailing Wage Rates for those trades people who may be employed for the proposed work under this contract.

20. INSURANCE REQUIREMENTS

The selected contractor shall carry liability insurance with an insurance company satisfactory to the Town so as to save the Town harmless from any and all claims for damages arising out of bodily injury to or death of any person or persons, and for all claims arising out of injury to or destruction of property caused by accident resulting from the use of implements, equipment or labor used in the performance of the contract or from any neglect, default or omission, or want of proper care, or misconduct on the part of the contractor or any one in his employ during the execution of the contract. **The Town of Arlington must be named as Additional Insured on all liability policies.**

1. **Commercial General Liability** coverage shall be in the amount of at least \$1,000,000 per occurrence and \$2,000,000 aggregate for bodily injury liability and \$1,000,000 per occurrence and \$2,000,000 aggregate for property damage liability, notwithstanding any provision to the contrary in the General Conditions.
2. **Motor Vehicle Liability** coverage shall include coverage for owned, hired, and non-owned vehicles and shall be in the amount of at least \$1,000,000 per person and

\$2,000,000 per occurrence for bodily injury liability and \$1,000,000 per occurrence for property damage liability, notwithstanding any provision to the contrary in the General Conditions.

3. **Workers Compensation** coverage as required by statute.

Certificates of Insurance must be provided to the Town upon contract award. Renewal certificates must be furnished by the contractor prior to the expiration date of any of the initial insurances.

END OF INSTRUCTIONS TO BIDDERS

**SECTION 00 41 00
FORM FOR GENERAL BID**

**#24-15 BRACKETT ELEMENTARY SCHOOL
PLAYGROUND RENOVATION**

TOWN OF ARLINGTON, MASSACHUSETTS

Proposal of _____ (hereinafter the "Bidder")

- (☐) a corporation organized and existing under the laws of the State of _____
(☐) a joint venture
(☐) a limited liability company
(☐) a partnership
(☐) an individual doing business as _____

(indicate corporation, partnership, joint venture, limited liability company, or individual as applicable)

To the Town of Arlington (hereinafter the "Owner"):

The undersigned Bidder, having examined the Contract Documents, as prepared by **Warner Larson Landscape Architects**, and the site and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, tools, and equipment necessary for the construction of site improvements, in accordance with the Contract Documents, within the time set forth therein, for **#24-15 Brackett Elementary School Playground**, located at **66 Eastern Avenue** in the Town of Arlington, Massachusetts.

The undersigned Bidder declares that the only parties interested in this Bid as principals are as stated; that the bid is made without collusion with any other person, firm, or corporation; and that no officer or agent is directly or indirectly interested in this Bid.

The undersigned Bidder understands that the information relative to existing structures, apparent and latent conditions, and natural phenomena as furnished to him on the Contract Drawings or in the Contract Documents or by the Owner or the Designer carries no guarantee expressed or implied as to its completeness or accuracy and he has made all due allowance therefor.

The undersigned Bidder agrees that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the Owner will suffer due to failure of the Bidder to execute a Contract and furnish satisfactory bonds as stipulated herein, and he further understands that should he so fail, the Owner shall have the right to retain as liquidated damages the entire amount of the bid security.

In submitting this Bid the undersigned Bidder agrees to hold this Bid open for forty-five (45) calendar days.

Bidder hereby agrees to commence and complete work under this contract on or before the dates to be specified in the written "Notice to Proceed" from the Owner, as stipulated in these Contract Documents. The undersigned Bidder further understands that the Contract Documents for which his bid is being submitted establish that liquidated damages in the amount of **\$100.00** per calendar day shall be applied for breach of Contract in accordance with the provisions of the CONTRACT AGREEMENT.

The Bidder intends to use the following subcontractors. Bidder acknowledges that the Town and Designer must be notified in writing of any change of subcontractors whether before commencement of work or during implementation of the Contract.

The undersigned Bidder acknowledges receipt of the following Addenda:

No.	_____	Date:	_____
No.	_____	Date:	_____
No.	_____	Date:	_____
No.	_____	Date:	_____
No.	_____	Date:	_____

PROPOSED BASE BID CONTRACT PRICE

The undersigned Bidder agrees to perform the Base Bid work described in the plans and specifications for the total price of:

_____ Dollars and _____ Cents
(in words)

\$ _____
(in figures)

ADD ALTERNATES

The proposed prices for the Add Alternates listed below shall cover all costs, including all overhead, profit, insurance or other direct or indirect expenses; and the prices given shall represent the exact amount per unit to be paid the Contractor. No additional adjustments will be allowed for overhead, profit, insurance or other direct or indirect expense of Contractor or Subcontractor. The Add Alternates are fully described in **Section 01 23 00, ALTERNATES**; the proposed prices below shall include a credit for the base contract work being replaced by the Add Alternate, if any.

ADD ALTERNATE #1 – Color Rubber Surfacing

Add alternate price for this work shall be lump sum.

Price for ADD ALTERNATE #1:

_____ Dollars and _____ Cents
(in words)

\$ _____
(in figures)

ADD ALTERNATE #2 – Furnishing and Installing Spinner and associated Engineered Wood Fiber and Rubber Edge

Add alternate price for this work shall be lump sum.

Price for ADD ALTERNATE #2:

_____ Dollars and _____ Cents
(in words)

\$ _____
(in figures)

TOTAL BID PRICE, INCLUDING BASE BID AND BOTH ADD ALTERNATES

Price for BASE BID plus ADD ALTERNATES #1 and #2:

_____ Dollars and _____ Cents
(in words)

\$ _____
(in figures)

Bid Prices to be shown in both words and figures. In case of discrepancy, the price shown in words will govern. All pricing shall remain valid for forty-five (45) days after the bid opening.

The undersigned offers the following information as evidence of its qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under the present name for _____ years and engaged in work similar in nature to the work of this contract for _____ years.
2. List any and all citations and/or violations issued by regulatory agencies and/or judgments against bidder from a court of law. **Type N/A if none.**
3. List any and all assessed penalties or liquidated damages, and the project in which they occurred. **Type N/A if none.**
4. List any and all contract terminations. **Type N/A if none.**
5. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as Principals are as follows: *(Attach additional sheets if necessary.)*

Name	Address
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

6. References: Provide at a minimum three references for completed work, one of which must be for a contract completed in the past five years that is similar, or larger, in size and scope to the work described in the bid documents. Include references for all contracts performed within the past two years that are similar in size and scope to the work specified in the bid documents. *Attach additional sheets if necessary.*

Owner Name:

Owner Address:

Contact Name:

Phone:

Email:

Description and date(s) of supplies and/or services provided:

Owner Name:

Owner Address:

Contact Name:

Phone:

Email:

Description and date(s) of supplies and/or services provided:

Owner Name:

Owner Address:

Contact Name:

Phone:

Email:

Description and date(s) of supplies and/or services provided:

Owner Name:

Owner Address:

Contact Name:

Phone:

Email:

Description and date(s) of supplies and/or services provided:

Owner Name:

Owner Address:

Contact Name:

Phone:

Email:

Description and date(s) of supplies and/or services provided:

If the Bidder is a foreign corporation and is selected for the work referred to above, it shall, in accordance with M.G.L. c.30, § 39L, furnish to the Owner a certificate of the Secretary of State stating that the corporation has complied with all requirements under M.G.L. c.156D and the date of such compliance, and that it has filed all required annual reports.

The undersigned certifies that, if selected as Contractor, he will within ten (10) days, Saturdays, Sundays, and legal holidays excluded, after presentation thereof by the Owner, execute the Contract and furnish the Owner with a satisfactory Labor and Materials/Payment Bond as set forth in the INSTRUCTIONS TO BIDDERS.

The undersigned certifies that he is able to furnish labor that can work in harmony with Owner's separate contractor(s) and all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to MGL c.149, § 44A.

The undersigned hereby certifies, under the pains and penalties of perjury, that the foregoing Proposal is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor Standards. The undersigned agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result if (1) the failure of the said Proposal to be based upon the payment of the said applicable prevailing wages rates or (2) the failure of the Proposer, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

The undersigned hereby certifies that all employees to be employed at the worksite shall have successfully completed a course in construction safety and health approved by the OSHA that is at least **10 hours** in duration at the time the employee begins work and that said undersigned shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

The undersigned further certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned further certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section 29F of Chapter 29, or any other applicable debarment provisions of any chapter of the General Laws or any rule or regulation promulgated thereunder.

The undersigned Bidder also agrees to perform any extra work not covered by the Contract, such work and the prices for such work to be approved by the Designer and agreed in writing by the Owner, and the Contractor shall accept such prices as full compensation for any such extra work

in accordance with the GENERAL CONDITIONS.

Submitted by:

Date: _____

Bidder's Company/Firm Name

Signature of Person Authorized to Sign on Behalf of Bidder

*Affix Corporate Seal Here
(if a corporation)*

Printed Name & Title

Business Address

City, State, Zip

Business Phone/Fax

Contact Person/Email Address

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Signature of individual submitting bid or proposal

Name of business

**THIS NON-COLLUSION FORM MUST BE SIGNED AND SUBMITTED WITH
THE BID OR PROPOSAL**

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, the undersigned, acting on behalf of the Contractor, certifies under the penalties of perjury that the Contractor is in compliance with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Signature of Individual submitting bid or proposal

Name of business

END OF BID FORMS



TOWN OF ARLINGTON
STANDARD CONTRACT DOCUMENT

Contract ID:

Contractor Legal Name (and d/b/a):	Town Department: Department Head:
Contractor Address:	Town Department Mailing Address:
Contractor Vendor ID (if applicable):	Billing Address (if different):

Account	Fund	Department ID	Project	Not to Exceed Amount:	Actual Amount
				\$	\$

Scope of work and contract details

Contract Start Date	Contract End Date	Option to Renew (Y/N)	Renewal Years

Town Comptroller APPROVED AS TO THE AVAILABILITY OF APPROPRIATION PURSUANT TO ARTICLE 12 OF THE GENERAL CONDITIONS	CONTRACTOR AGREES TO PROVIDE THE GOODS OR SERVICES IN ACCORDANCE WITH THE CONTRACT	Awarding Authority/Official (ATTACH LETTER OF AWARD)
\$	Title:	
Signature:	Signature:	Signature:
Date:	Date:	Date:
APPROVED AS TO FORM		
Signature:		
Town Counsel		



TOWN OF ARLINGTON **STANDARD CONTRACT GENERAL CONDITIONS**

Article 1. Definitions.

1.1 The following terms in these Contract Documents shall be construed as follows:

1.1.1 “Town” shall mean the Town of Arlington, Massachusetts.

1.1.2 “Contract” and “Contract Documents” shall include, in the following hierarchy of document precedence, as applicable: the Town’s Standard Contract Document; these Standard Contract General Conditions; the Invitations for Bids, Requests for Proposals, or other solicitations; the Contractor’s responses including Contractor Certifications and Applications, excluding any language stricken by Town as unacceptable and including any negotiated statements of work contemplated by the solicitation; and Performance Bonds, which documents are incorporated herein by reference.

1.1.3 “Contractor” shall mean the individual, partnership, corporation or other entity to which this Contract is awarded.

1.1.4 “Official” shall mean the awarding authority/officer acting on behalf of the Town in the execution of the Contract.

Article 2. Performance.

2.1 The Contractor shall conform to all determinations and directions, in accordance with provisions of this Contract, of the Official concerning all questions which may arise relating to the performance of services under this Contract.

2.2 The Contractor shall, upon written request of the Official, remove from Town premises and replace all individuals in the Contractor’s employ whom the Official determines to be disorderly, careless or incompetent or to be employed in violation of the terms of this Contract.

2.3 Town is entitled to ownership and possession of all deliverables purchased or developed with Contract funds. All work papers, reports, questionnaires and other written materials prepared or collected by the Contractor in the course of completing the work to be performed under this Contract shall at all times be the exclusive property of the Town. The Contractor shall not use such materials for any purposes other than the purpose of this Contract without the prior written consent of the Official. All Contractor proprietary rights shall be detailed in the Contract Documents.

2.4 Prior to beginning performance under this Contract, Contractor must receive a Purchase Order from Town.

Article 3. Acceptance of Goods and Services.

3.1 Performance under this Contract shall include services rendered, obligations due, costs incurred, and goods and deliverables provided to and accepted by Town. The Town shall have a reasonable opportunity to inspect all goods and deliverables, services performed by, and work product of the Contractor, and accept or reject such goods, deliverables, services, or work product.

Article 4. Time.

4.1 It is understood and agreed that Contractor's performance shall be timely and meet or exceed industry standards for the performance required.

Article 5. Compensation.

5.1 The Contractor may, in the absence of a payment schedule, periodically submit to the Official invoices, itemizing goods, services, labor and expenses for which compensation is due and requesting payment for goods received or services rendered by the Contractor during the period covered by the invoice.

5.2 Thereupon the Official shall estimate the value of goods or services accepted by the Town in accordance with the specific terms and conditions of a Contract, and Town shall pay to the Contractor such amount less sums retained under the provisions of Article 8 of these General Conditions.

5.3 The Town shall pay in full and complete compensation for goods received and accepted and services performed and accepted under this Contract in an amount not to exceed the amount shown on the face of this Contract paid in accordance with the rate indicated or in accordance with a prescribed schedule. Acceptance by the Contractor of any payment or partial payment, without any written objection by the Contractor, shall in each instance operate as a release and discharge of the Town from all claims, liabilities or other obligations relating to the performance of a Contract.

5.4 In the event that this Contract provides for reimbursement by the Town to the Contractor for travel or related expenses, the Contractor may submit such proposed expenses to the Official for approval prior to the incurrence of such expenses. Such expenses shall be reviewed on a case-by-case basis. Nothing herein shall be construed to require the Town to reimburse the Contractor for the expenses described in this Section.

5.5 The Contractor shall furnish any information, estimate or vouchers relating to the goods or services or to documentation of labor or expenses as may be requested by the Official.

Article 6. Relationship with the Town.

6.1 The Contractor is retained solely for the purposes set forth in this Contract. Contractor's relationship to the Town during the term of this Contract shall be that of an independent Contractor. The Contractor shall have no authority to involve the Town in any contract or to incur any liability on the part of the Town. The Contractor, its agents or employees shall not be considered as having the status or pension rights of an employee; provided that the Contractor shall be considered an employee for the purpose of General Laws c. 268A (the Conflict of Interest Law). The Town shall not be liable for any personal injury to or death of the Contractor, its agents or employees.

6.2 Unless all the terms and conditions for the delivery or provision of goods or services by the Contractor to the Town specified by this Contract are expressly set forth in a writing incorporated herein by reference, such delivery of goods or services shall require written approval of or direction by the Official prior to the incurrence of any liability by the Town. The Town has no legal obligation to compensate a Contractor for performance that is not requested and is intentionally delivered by a Contractor outside the scope of a Contract.

6.3 Any amendments to the terms and conditions of this Contract must be in writing and signed by the Official and Contractor and filed with the Town Comptroller. The Town's Standard Contract Document and Standard Contract General Conditions shall supersede any conflicting verbal or written agreements relating to the performance of a Contract, including contract forms, purchase orders, or invoices of the Contractor.

6.4 Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any way limit the legal or equitable remedies available to that party. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach.

Article 7. Assumption of Loss and Liability.

7.1 The Contractor shall pay and be exclusively responsible for all debts for labor and material contracted for by Contractor for the rental of any appliance or equipment hired by Contractor and/or for any expense incurred on account of services to be performed under this Contract.

7.2 The Contractor shall bear the risk of loss for any Contractor materials used for a Contract and for all goods and deliverables, until possession, ownership and full legal title to the goods and deliverables are transferred to and accepted by the Town.

7.3 To the fullest extent permitted by law, the Contractor shall indemnify, hold harmless, and assume the defense of the Town, its officers, agents or employees, with counsel acceptable to Town, which acceptance shall not be unreasonably withheld, from all liabilities, suits, claims, losses, and costs or any other damages against them or any of them arising from any act or omission of the Contractor, its agents, officers, employees, or subcontractors in any way connected with performance under this Contract.

Article 8. Remedies of the Town.

8.1 If the Contractor provides goods and/or services that do not comply with Contract specifications and requirements as reasonably determined by the Official, the Official may request that the Contractor refurnish services or provide substitute goods at no additional cost to the Town

until approved by the Official. If the Contractor shall fail to provide satisfactory goods or services, the Official, in the alternative, may make any reasonable purchase or Contract to purchase goods or services in substitution for those due from the Contractor. The Town may deduct the cost of any substitute Contract or nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. The Town otherwise retains all rights and remedies at law or in equity.

8.2 If the damages sustained by the Town as determined by the Official exceed sums due or to become due, the Contractor shall pay the difference to the Town upon demand.

8.3 The Contractor shall not be liable for any damages sustained by the Town due to the Contractor's failure to furnish goods or services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including but not necessarily limited to a state of war, act of enemies, embargoes, expropriation or labor strike or any unanticipated federal, state, or municipal governmental regulation or order, provided that the Contractor has notified the Official in writing of such cause as soon as practicable.

8.4 The Town may terminate this Contract for cause if the Contractor has breached any material term or condition and has not corrected the breach within a reasonable period of time after written notice from the Town identifying the breach. This Contract may be terminated at any time for the convenience of the Town at the option of the Official by delivering or mailing to the Contractor at the Contractor's business address a written notice of termination setting forth the date, not less than seven (7) days after the date of such delivery or mailing, when such termination shall be effective. In the event of such termination for convenience, the Contractor shall be compensated for services rendered to the effective date of said termination in accordance with the rates of compensation specified in this Contract. The parties agree that if Town erroneously, improperly or unjustifiably terminates for cause, such termination shall be deemed a termination for convenience, which shall be effective thirty (30) days after such notice of termination for cause is provided.

Article 9. Remedies of the Contractor.

9.1 If damages, other than loss on nonconforming services or on services not performed, are actually sustained by the Contractor due to any act or material omission for which the Town is legally responsible, the Town may allow a sum equal to the amount of such damages sustained by the Contractor as determined by the Official in writing, provided the Contractor shall have delivered to the Official a detailed written statement of such damages and cause thereof within thirty (30) days after the act or material omission by the Town.

Article 10. Prohibition Against Assignment.

10.1 The Contractor shall not assign, delegate, subcontract or in any way transfer any interest in this Contract without prior written consent of the Official.

Article 11. Compliance with Law and Public Policy.

11.1 This Contract is made subject to all laws of the Commonwealth of Massachusetts. If the Contractor is a business, the Contractor certifies that it is listed under the Secretary of State's website as licensed to do business in Massachusetts, as required by law.

11.2 The Contractor shall provide, at its sole expense, all necessary licenses, permits or other authorizations required by the Town, the Commonwealth of Massachusetts or any other governmental agency with proper jurisdiction.

11.3 Where applicable, the Contractor shall take out and maintain during the term of this Contract such Worker's Compensation insurance as may be reasonably necessary to protect the Contractor from claims under General Laws c. 152 (the Worker's Compensation Law).

11.4 The Contractor shall maintain for the duration of the Contract professional, liability, and other insurance as required by the solicitation or as otherwise required by Town, but in no event less than the amount and type of insurance coverage sufficient to cover the performance. The Contractor shall name the Town as an additional insured on the policies described in this Section. The Town's insurance requirements are further described in the Insurance Addendum to this Contract.

11.5 The Contractor agrees and shall require any subcontractor to agree not to discriminate in connection with the performance of work under the Contract against any employee or applicant for employment because of sex, race, color, sexual orientation, gender identity or expression, marital status, parental status, sex-offender status, prior psychiatric treatment, military status, religious creed, disability, national origin, ancestry, source of income, or age, unless based upon a legally permissible and bona fide occupational qualification. The Contractor agrees and shall require any subcontractor to agree to post in conspicuous places notices to be provided by the Massachusetts Commission Against Discrimination, setting forth provisions of the Fair Employment Practice Law of the Commonwealth.

11.6 The Contractor's attention is called to General Laws c. 268A (the Conflict of Interest Law). The Contractor shall not act in collusion with any Town officer, agent, or employee, nor shall the Contractor make gifts regarding this Contract or any other matter in which the Town has a direct and substantial interest.

11.7 The Contractor shall keep himself fully informed of all Town Bylaws, any regulations, and State and Federal laws, which in any manner affect the work herein specified. The Contractor shall at all times observe and comply with said ordinances, regulations or laws, and shall defend, hold harmless, and indemnify the Town, its officers, agents and employees against any claim or liability arising from or based on the violations of such bylaws, regulations or laws, caused by the negligent actions or omissions of the Contractor, its agents, or employees.

11.8 The Contractor certifies that neither it nor any of its subcontractors are currently debarred or suspended by the U.S. government, the Commonwealth of Massachusetts, or any of its subdivisions.

11.9 The Contractor certifies that neither it nor any of its subcontractors have been subject to a federal or state criminal or civil judgment, administrative citation, final administrative

determination, order or debarment resulting from a violation of G.L. c.149, c.151, or the Fair Labor Standards Act within three (3) years prior to the date of the Contract; or certifies that it has provided copies of any and all of the above to the Official prior to the date of the Contract and any required wage bond or insurance; and certifies that while the Contract is in effect, it will report any instance of the above to the Official within five (5) days of Contractor's receipt. The Contractor agrees and shall require any subcontractor to post in conspicuous places notices to be provided by the Town, informing employees of the protections of applicable local, state, and federal law.

11.10 Contractor agrees that they shall comply fully with all state and federal laws and regulations regarding human trafficking and forced labor. Failure to do so will be considered a breach of this Contract.

11.11 If applicable, as determined by the Massachusetts Department of Labor Standards, the Contractor shall comply with the Massachusetts Prevailing Wage Law (M.G.L. c. 149, s.26, -27H) for public works projects, which establishes minimum wage rates for workers on such projects. The Contractor shall comply and shall cause its subcontractors to comply with M.G.L. c. 149, s. 27B, which requires that a true and accurate record be kept of all persons employed on a project for which the prevailing wage rates are required. The Contractor shall, and shall cause its subcontractors to, submit weekly copies of their weekly payroll records to the Town, to the extent the Prevailing Wage Law is applicable.

11.12 The Contractor shall comply with the Town's Bylaws for any contract awarded pursuant to M.G.L. c.149 or M.G.L. c.30, sec. 39M et. seq., and as may be amended from time to time.

Article 12. Contract Subject to Appropriation.

12.1 This Contract and payments hereunder are subject to the availability of an appropriation therefor. Any oral or written representations, commitments, or assurances made by the Official or any other Town representatives are not binding. Contractors should verify funding prior to beginning performance.

12.2 If the Contract is funded under a grant with the Federal Government, it is being executed without further appropriation pursuant to General Laws c. 44, s.53A.

12.3 When the amount of the Town Comptroller's certification of available funds is less than the face amount of the Contract, the Town shall not be liable for any claims or requests for payment by the Contractor which would cause total claims or payments under this Contract to exceed the amount so certified.

12.4 Unless otherwise expressly provided in a writing incorporated herein by reference, the amount certified by the Town Comptroller as available funds under this Contract may be increased or decreased by the Official with the written approval of such change by the Town Comptroller. In the event of any decrease in the amount certified, the Contractor shall be compensated for services

rendered to the effective date of such reduction, in accordance with the rates of compensation specified in this Contract.

Article 13. Release of Town on Final Payment.

13.1 Acceptance by the Contractor of payment from the Town for final services under this Contract shall be deemed to release forever the Town from all claims and liabilities, except those which the Contractor notifies the Official in writing within six (6) months after such payment.

Article 14. Public Records and Access.

14.1 This Contract is subject to the Commonwealth's Public Records Law, M.G.L. ch. 66. s. 10. Any documents related to this Contract shall be retained according to the Secretary of State's Municipal Retention Schedule or as required by the Town for a period not shorter than required said Municipal Retention Schedule.

14.2 The Contractor shall provide full access to records related to performance and compliance to the Town for seven (7) years beginning on the first day after the final payment under this Contract or such longer period necessary for the resolution of any litigation, claim, negotiation, audit or other inquiry involving this Contract. Access to view Contractor records related to any breach or allegation of fraud, waste and/or abuse may not be denied and Contractor cannot claim confidentiality or trade secret protections solely for viewing but not retaining documents. Routine Contract performance compliance reports or documents related to any alleged breach or allegation of non-compliance, fraud, waste, abuse or collusion may be provided electronically and shall be provided at Contractor's own expense. Reasonable costs for copies of non-routine Contract related records shall not exceed the rates for public records under 950 C.M.R. 32.00.

Article 15. State Taxation Certification.

15.1 Pursuant to M.G.L. c. 62C, s. 49A, the Contractor certifies under penalties of perjury, that to the best of Contractor's knowledge and belief, Contractor has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support. (NOTE: The Taxpayer Identification Number will be furnished to the Massachusetts Department of Revenue to determine compliance with the above- referenced law).

Article 16. Monies Owed to Town.

16.1 Pursuant to M.G.L. c. 60, s. 93, the Contractor agrees that the Town Treasurer and Collector may withhold from amounts owing and payable to the Contractor under this Contract any sums owed to any department or agency of the Town of Arlington which remain wholly or partially unpaid. This shall include but not be limited to unpaid taxes and assessments, police details, and any other fees and charges until such sums owed have been paid in full, and the Town Treasurer and Collector may apply any amount owing and payable to the Contractor to satisfy any monies owed to the Town.

Article 17. Prohibition Against Bid Collusion.

17.1 The Contractor certifies under penalties of perjury that his/her bid or proposal has been made and submitted in good faith and without collusion, fraud, or unfair trade practice with any other person. As used in this article, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. Any actions to avoid or frustrate fair and open competition are prohibited by law, and shall be grounds for rejection or disqualification of a Response or termination of this Contract.

Article 18. Choice of Law.

18.1 Any actions arising out of this Contract shall be governed by the laws of Massachusetts, and shall be brought and maintained in a State or federal court in Massachusetts which shall have exclusive jurisdiction thereof.

Article 19. Effective Date and Signatures.

19.1 This Contract shall be effective upon the date signed by the parties on the Town's Standard Contract Document.



INSURANCE ADDENDUM

THIS INSURANCE ADDENDUM (“Insurance Addendum”) is hereby incorporated by reference into the Town’s Standard Contract General Conditions.

1. Scope and term.

- a. The Contractor shall maintain for the duration of the Contract professional, liability, and other insurance as required by the solicitation or as otherwise required by Town, but in no event less than the amount and type of insurance coverage sufficient to cover the performance.
- b. The Contractor shall name the Town as an additional insured on the policies required and shall specifically refer in the certificates to this Contract and shall state that insurance is as required by this Contract. The description of each coverage listed on the certificates shall include an appropriate means of identification. The Contractor shall not commence the work until proof of compliance with this Section has been furnished to the Town.
- c. Not later than the commencement date of the Contract, and annually thereafter for the term of this Contract or any extension thereof, Contractor shall furnish the Town with certificates of insurance evidencing coverages described in the Contract and any associated documents, and evidencing the Town’s additional insured status. Such certificates shall contain a provision providing the Town thirty (30) days advance written notice by registered mail of any change in or cancellation of coverage or ten (10) days’ notice if cancellation is due to nonpayment of premiums.

2. **Requirements.** The Contractor shall maintain the above-mentioned policies consistent with addendum with carriers having an A.M. Best credit rating of A-VIII (or better). The required insurance policies shall include all major divisions of coverage and shall be on a comprehensive general basis including premises and operations (including X-C-U), and owned, non-owned, and hired motor vehicles. Such insurance shall be written for not less than the limits of liability required by law, or the limits set forth below, whichever are greater.
3. **Remedies.** The Town reserves the right to pursue any remedies available at law or in equity for the Contractor’s failure to comply with the requirements set forth in this addendum.
4. **Waiver.** The Contractor agrees to waive all claims against the Town, its officers, agents or employees for any injury or death sustained by Contractor’s officers or employees, or for damage to its vehicles or equipment arising out of work contemplated by this Contract. The Contractor and all subcontractors shall waive subrogation rights against the Town for all losses.

5. **Notice of Occurrence.** Notice of Occurrence shall be given to the Town at the following addresses:

Town of Arlington
c/o Town Manager
730 Massachusetts Avenue
Arlington, MA 02476

With a copy to:

Town Counsel
50 Pleasant Street
Arlington, MA 02476

SECTION 00 70 00

GENERAL CONDITIONS

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
- 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 - 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 - 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 - 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 - 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 - 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 - 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 - 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 - 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 - 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

- Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
 - F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
 - G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
 - H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
 - I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
 - J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
 - K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

- attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
 - G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00800

SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1. DEFINITIONS AND TERMINOLOGY

Delete the words "The individual or entity named as such in the Agreement" in 1.01.A.22 of the General Conditions, "Engineer", and insert the following in their place:

"The individual or entity duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly appointed representatives."

ARTICLE 2. PRELIMINARY MATTERS

SC-2.02

Delete paragraph 2.02A of the General Conditions in its entirety.

SC-2.03

Delete paragraph 2.03 A.3 of the General Conditions.

SC-2.05

Delete paragraph 2.05 A.3 of the General Conditions.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01

Add the following sentence at the end of Paragraph 3.01A of the General Conditions:

"...by all. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion."

SC-3.03

Delete the last phrase of paragraph 3.03 A.3 of the General Conditions starting with “had”, and substitute the following:

“knew or reasonably should have known thereof.”

ARTICLE 4. COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01

Add a new paragraph immediately after paragraph 4.01A of the General Conditions which is to read as follows:

“B. Notwithstanding the time limitations provided in paragraph 4.01A, the OWNER may desire to commence the Contract Times later than the sixtieth day after the bid opening. The OWNER and CONTRACTOR, upon mutual agreement, may extend the commencement of the Contract Times to any date that they elect. OWNER must obtain CONTRACTOR’s approval for extending the time beyond the dates/times stated in the Contract Documents.”

SC-4.03

Add a new paragraph immediately after paragraph 4.03A of the General Conditions which is to read as follows:

"B. Engineer may check the lines, elevations and reference marks set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for construction of the entire Work in accordance with the Contract Documents. Contractor shall furnish personnel to assist Engineer in checking lines and grades."

SC-4.05

Delete Article 4.05A in its entirety and replace with the following:

“A. The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement or performance of any of the work or any delay or suspension of any portion of the work, whether such delay is caused by the Owner, the Engineer, or otherwise except as provided for within the prevailing statutes. The Contractor acknowledges that the Contractor’s sole remedy for any such delay and/or suspension will be an extension of time as provided in the Contract Documents. The Contractor will under no circumstances be eligible for additional compensation on account of any delay even if an extension of time is granted by the Owner.

Add the following to the paragraph that follows 4.05E.5:

“ Accumulating the amount of time required to complete a series of additional work items or delays and adding this time to the original Contract Time will not be considered

justification for an extension of time. To justify an extension of Contract Time, the Contractor must prove clearly and convincingly that the critical path for construction has been impacted by circumstances beyond the control of the Contractor and that the CPM schedule cannot be revised to eliminate the need for the requested time extension.”

Add the following new paragraphs after paragraph 4.05G of the General Conditions:

“4.06 Liquidated Damages:

- A. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the Owner from progress payments or any amounts owing to the Contractor, or otherwise collected.
- B. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.
- C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided that the Contractor shall not be charged with liquidated damages of any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; Provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:
 - 1) to any preference, priority or allocation order duly issued by the Government;
 - 2) to unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
 - 3) to any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections C (1) and C (2) above;
- D. Provided, further, that the Contractor shall, within thirty (30) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner, in writing, of the causes of the delay, who shall ascertain

the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter."

ARTICLE 5. SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03

Delete the term "Supplementary Conditions" of paragraph 5.03A of the General Conditions and replace it with "Contract Documents".

Delete the term "Supplementary Conditions" of paragraph 5.03C line 2 of the General Conditions and replace it with "Contract Documents".

SC-5.05

Delete the following words from line 3 of paragraph 5.05 F.1 of the General Conditions:

"...or was not shown or indicated with reasonable accuracy"

SC-5.06

Delete the term "Supplementary Conditions" in paragraph 5.06A of the General Conditions and replace it with "Contract Documents".

Add the following to the first sentence of paragraph 5.06C:

"or unless Contractor caused or contributed to such Hazardous Environmental Condition."

ARTICLE 6. BONDS AND INSURANCE

NOTICE TO CONTRACTOR:

1. Proof of Insurance coverage shall be furnished to the Owner in accordance with the schedule for submittal of Bonds and Agreements.
2. Additionally, refer to Article 2. PRELIMINARY MATTERS, Paragraph SC-2.01 B of the General Conditions.

SC-6.01

Insert these sentences following SC-6.01.A of the General Conditions:

"The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The CONTRACTOR shall pay the premiums for such Bonds."

SC-6.02

Add the following paragraph to paragraph 6.02N:

“The Contractor shall immediately stop work on the Project and shall not resume work until the Contractor provides evidence, to the Owner and Engineer, in the form of an acceptable insurance certificate, of new insurance coverage that replaces all cancelled coverage that is required for the Project.”

SC-6.03

Add the following paragraphs to SC-6.03B of the General Conditions:

- “6. If the aggregate limits of liability indicated in Contractor's insurance provided in accordance with paragraph 6.03 are not sufficient to cover all claims for damages arising from its operations under this Contract and from any other work performed by it or if the commercial general liability insurance policy of insurance does not provide that the general aggregate limits apply on a per project and per location basis, Contractor shall have the policy amended so that the aggregate limits of liability required by this Contract will be available to cover all claims for damages due to operations under this Contract.
7. Include by endorsement that the insurer shall waive all rights of subrogation in favor of the Owner, Engineer and any other party named in the written contract against whom the insurer must agree to waive rights of subrogation.”

Insert “railroad protective liability” in line 2 of paragraph 6.03C.

Insert “except employer’s liability” after the word “insureds” in line 1 of paragraph 6.03C.1.

Add the following paragraphs after 6.03C:

- “D. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance, including, as applicable, United States Longshoreman and Harbor Workers’ Compensation Act, Jones Act, stop-gap employer’s liability coverage for monopolistic states, and foreign voluntary workers’ compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers’ Compensation and Related Policies	Policy limits of not less than:
Workers’ Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman’s)	Statutory
Foreign voluntary workers’ compensation (employer’s responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$N/A

Workers' Compensation and Related Policies	Policy limits of not less than:
Bodily injury by disease—aggregate	\$N/A
Employer's Liability	
Each accident	\$100,000
Each employee	\$100,000
Policy limit	\$500,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$N/A

E. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

F. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.

6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10, CG 20 33 and CG 20 37 or insurer's endorsement offering similar coverage. If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
7. For design professional additional insureds, ISO Endorsement CG 20 32 or insurer's endorsement offering similar coverage.
8. Independent Contractors Coverage.

G. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

H. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

I. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$1,000,000

- J. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000

- K. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limits equivalent to those required in paragraph 6.03 after accounting for partial attribution of its limits to underlying policies, as allowed above.

- L. *Contractor's Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$2,000,000
General Aggregate	\$2,000,000

- M. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	Policy limits of not less than:
Each Claim	\$1,000,000
Annual Aggregate	\$1,000,000

- N. *Railroad Protective Liability Insurance:* Prior to commencing any Work within 50 feet of railroad-owned and controlled property, Contractor shall (1) endorse its commercial general liability policy with ISO CG 24 17, removing the contractual liability exclusion for work within 50 feet of a railroad, (2) purchase and maintain railroad protective liability insurance meeting the following requirements, (3) furnish a copy of the endorsement to Owner, and (4) submit a copy of the railroad protective policy and other railroad-required documentation to the railroad, and notify Owner of such submittal.

Railroad Protective Liability Insurance	Policy limits of not less than:
Each Claim	\$N/A
Aggregate	\$N/A

- O. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

Unmanned Aerial Vehicle Liability Insurance	Policy limits of not less than:
Each Claim	\$500,000
General Aggregate	\$1,000,000

SC-6.04

Delete Article 6.04 of the General Conditions in its entirety.

SC-6.05

Amend the last sentence of paragraph 6.05A of the General Conditions by striking out the words "held by Owner or Contractor as trustee or fiduciary, or."

SC-6.07

Add the following paragraph 6.07 after paragraph 6.06 of the General Conditions:

"6.07 Owner's Objections to Contractor's Insurance Coverage

- A. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 6 on the

basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within thirty days of the date of delivery of such certificates to Owner in accordance with paragraph 6.02D. Contractor will provide such additional information in respect of insurance provided by him as Owner may reasonably request."

ARTICLE 7. CONTRACTOR'S RESPONSIBILITIES

SC-7.02

Delete paragraph 7.02B of the General Conditions in its entirety and replace with the following:

"B. At the site of the Work the Contractor shall employ a full-time construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who will be continued in the capacity for the particular job involved unless the representative ceases to be on the Contractor's payroll. If at any time during the Work the representative is deemed by the Engineer to be no longer acceptable, the representative shall be promptly replaced by the Contractor. All communications to the superintendent or foreman shall be as binding as if given to the Contractor."

SC-7.08

Delete the second sentence in paragraph 7.08A of the General Conditions.

SC-7.13

In line 3 of paragraph 7.13G of the General Conditions change "Supplementary Conditions" to "Contract Documents".

SC-7.16

In paragraph 7.16C.1 of the General Conditions, delete the word "timely" from the first line.

In paragraph 7.16E.1.b of the General Conditions, delete the word "timely" from the first line.

SC-7.18

Change the phrase "negligent act or omission" to "negligent or wrongful act or omission" in line 11 of paragraph 7.18A of the General Conditions.

Add the following to the end of paragraph 7.18A of the General Conditions:

"The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the Engineer and Owner against judgments suffered because of the Contractor's work and to assume the cost of defending the Engineer and Owner against claims as described in the foregoing paragraph."

ARTICLE 9. OWNER'S RESPONSIBILITIES

SC-9.02

Delete the phrase “provided Contractor makes no reasonable objection to the replacement engineer” in paragraph 9.02A of the General Conditions.

SC-9.06

Delete paragraph 9.06A of the General Conditions in its entirety.

SC-9.09

Insert the following after the first sentence of paragraph 9.09A of the General Conditions:

“However, the Owner shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.”

ARTICLE 10. ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.01

Add a new paragraph 10.01B after paragraph 10.01A of the General Conditions, which is to read as follows:

"B. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the Engineer and Contractor, (2) between the Owner and a Subcontractor or Subcontractors, or (3) between any person or entities other than the Owner and Contractor. The Engineer shall, however, be entitled to performance and enforcement of obligations under the Contract Documents intended to facilitate performance of the Engineer's duties."

SC-10.02

Insert the following at the end of paragraph 10.02B of the General Conditions:

“However, the Engineer shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.”

SC-10.03

Delete the last sentence of paragraph 10.03B.

SC-10.07

Insert the following after the first sentence of paragraph 10.07B of the General Conditions:

“However, the Engineer shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.”

ARTICLE 13. COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

Delete Article 13 of the General Conditions in its entirety and replace with the following:

"A. The unit price of an item of Unit Price work shall be subject to reevaluation and adjustment under the following conditions:

- (1) If the total extended bid price [Estimated Quantity times the Bid Unit Price] of a particular item of Unit Price Work amounts to 5 percent or more of the Original Contract Price and the variation in the quantity of the particular item of Unit Price Work performed by Contractor differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement; and
- (2) If there is no corresponding adjustment with respect to any other item of work; and
- (3) If Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 12 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed. If Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner shall be entitled to an adjustment in the unit price in an amount determined by the Engineer. Engineer shall not be liable in connection with any determination relating to adjustments which is rendered in good faith."

ARTICLE 14. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.03

Delete the word “Prompt” at the beginning of paragraph 14.03C of the General Conditions.

SC-14.07

Revise paragraph 14.07A of the General Conditions as follows:

- A. Delete the word “seven” and replace it with the word “ten” so that it reads “after ten days’ written notice to Contractor.”

ARTICLE 15. PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01

Delete paragraph 15.01B.4 of the General Conditions and insert the following in its place:

"4. Retainage with respect to progress payments will be five percent or, if stipulated, the maximum allowed by law."

Delete the word "immediate" from line 2 of subparagraph 15.01E.2 of the General Conditions.

Delete subparagraph 15.01E.3 of the General Conditions in its entirety.

SC-15.02

Delete paragraph 15.02A in its entirety and insert the following in its place:

"A. Contractor warrants and guarantees that title to all work, material and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than at the time of Application for Payment free and clear of all liens. Contractor shall provide written transfer of title and a certified paid invoice provided by the supplier."

SC-15.03

Delete the third sentence of paragraph 15.03C of the General conditions and replace it with the following:

"Owner shall review the preliminary certificate and make written objection to Engineer as to any provisions of the certificate or attached punch list."

In the same paragraph, delete the phrase "within 14 days after submission of the preliminary certificate to Owner" in the fourth sentence; delete the phrase "within said 14 days" in the fifth sentence.

SC-15.06

Delete from lines 5 and 6 of paragraph 15.06B of the General Conditions the phrase "within 10 days after receipt of the final Application for Payment," in the first sentence.

SC-15.08

Delete paragraph 15.08A of the General Conditions and insert the following in its place:

"A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions: (i) correct such defective work, or, if it has been rejected by Owner, remove it from the site and replace it with work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other work or the work of others therefrom. If Contractor does not begin the repairs within ten (10) days of receipt of written notification and promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk, loss or damage, Owner may have the defective work corrected or the rejected work removed and replaced, and all claims, costs,

losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.”

ARTICLE 16. SUSPENSION OF WORK AND TERMINATION

SC-16.02

Add a new paragraph immediately after paragraph 16.02 A.4 of the General Conditions which is to read as follows:

- "5. If the Work to be done under this Contract shall be abandoned, or if this Contract or any part thereof shall be sublet, without the previous written consent of Owner, or if the contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified."

ARTICLE 18. MISCELLANEOUS

SC-18.08

Replace paragraph 18.08A with the following:

- “A. The Contractor shall not assign the whole or any part of this Contract or any moneys due or to become due hereunder until thirty (30) days prior notice in writing has been given to the Owner of the intention to assign, which notice shall state the identity and address of the prospective assignee. No assignment shall be made without the Owner's prior written consent. Such consent shall not be unreasonably withheld. In case the Contractor assigns all or any part of the moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations of services rendered or materials supplied for the performance of the work called for in this Contract.”

SC-18.11, 18.12, 18.13, 18.14

Add the following new paragraphs after paragraph 18.10 of the General Conditions:

“18.11 Liability

It is understood and agreed that members of the Owner or any agent or employees of the Owner signing this Agreement shall not be personally liable hereunder for any action incurred in connection with this Agreement.

18.12 State Statutes and Regulations

See Section 00830 of these Specifications for further modifications of the General Conditions due to state statutes and regulations.

18.13 Severability

If any provision of this Agreement shall be invalid or unenforceable to any extent or in any application, then the remainder of this Agreement and of such terms and conditions, except to such extent or in such application, shall not be affected thereby, and each and every term and condition of this Agreement shall be valid and enforced to the fullest extent and in the broadest application permitted by law."

END OF SECTION

SECTION 00830

STATE STATUTES AND REGULATIONS
COMMONWEALTH OF MASSACHUSETTS

A. REVISIONS TO GENERAL CONDITIONS

1. Definitions
2. Subsurface Conditions Found Different
3. Proprietary Specifications
4. Substitutions and “Or Equals” – Contractor’s Expense
5. Subcontracting
6. Permits
7. Massachusetts Sales and Use Tax
8. Contractor Records
9. Engineer’s Decisions on Requirements of Contract Documents and Acceptability of Work
10. Change of Contract Price
11. Payments
12. Suspension of Work and Termination
13. Special Requirements for Hazardous Wastes Contracts
14. Labor Classifications and Prevailing Wage Rates
15. Contractor’s Surety

B. OTHER REGULATORY REQUIREMENTS

1. Working Hours
2. DEP Community Sound Level Criteria
3. OSHA 10 Hour Certification Requirements

ATTACHMENT A

Prevailing Wage Rates

ATTACHMENT B

Excerpts from Chapter 149, Chapter 30 and Chapter 82 of the Massachusetts General Law

ATTACHMENT C

Goals for Participation by Minority Business Enterprises (MBE) and Women Business Enterprises (WBE) - NOT APPLICABLE TO THIS CONTRACT

ATTACHMENT D

Change Orders

A. REVISIONS TO GENERAL CONDITIONS:

1. Definitions

The term "Awarding Authority," as used herein, shall be considered to be synonymous with the term "Owner," described in definition 1.01 A.30.

Delete definition 1.01 A.42 entitled "Substantial Completion" in the General Conditions in its entirety and insert the following in its place:

"Substantial Completion shall be interpreted in accordance with Massachusetts General Law (MGL) c. 30, §39G or 39K as appropriate."

2. Subsurface Conditions Found Different

Add the following sentence to the end of paragraph 5.04A of the General Conditions:

"...to do so. Adjustments resulting from subsurface or latent physical conditions will be in accordance with MGL c. 30, §39N."

3. Proprietary Specifications

Revise the third sentence of Paragraph 7.05A of the General Conditions to read as follows:

"Unless the specification indicates that a proprietary item is called for, other items of material or equipment or material or equipment of other suppliers may be submitted to Engineer for review under the circumstances described below, and in accordance with MGL c. 30, §39M."

4. Substitutions and "Or Equals" – Contractor's Expense

Insert the following at the beginning of Paragraphs 7.05B and 7.06E of the General Conditions:

"Except as required by and indicated in the specifications and contract documents pursuant to MGL c. 149, §44F,".

5. Subcontracting

Add the following language at the end of paragraph 7.06J of the General Conditions:

", except as required otherwise by MGL c. 149, §44F, for Work governed by MGL c. 149, §44A through 44H."

6. Permits

Delete paragraph 7.09A of the General Conditions in its entirety and insert the following in its place:

"A. Unless otherwise provided for in Section 00890 PERMITS, the Awarding Authority shall be responsible for identifying and obtaining all federal, state, and local permits required by the nature and location of construction, including but not limited to railroad permits, building construction permits, and permits for street and highway cuts and openings. Contractor shall be responsible for obtaining all permits required of its equipment, work force, or particular operations (such as blasting) in the performance of the Work and not otherwise specified to be obtained by the Awarding Authority. These permit fees shall be paid by Contractor. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of bids, or, if there are no Bids, on the Effective Date of the Agreement."

7. Massachusetts Sales and Use Tax

Add the following paragraph after paragraph 7.10A of the General Conditions:

"B. The materials and supplies to be used by the Contractor in the Work of this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. The Awarding Authority tax exemption certificate number will be furnished to the Contractor."

8. Contractor Records

Add a new paragraph immediately after paragraph 7.11C of the General Conditions, which is to read as follows:

"D. The Contractor shall comply with all applicable provisions Chapter 30, Section 39R of the Massachusetts General Laws regarding, Contractor's records."

9. Engineer's Decisions on Requirements of Contract Documents and Acceptability of Work

Add the following language at the end of paragraph 10.06A of the General Conditions:

"The Engineer's interpretation will be made in accordance with the requirements of MGL c. 30, §39P."

10. Change of Contract Price

Delete paragraphs 11.07, 13.01, 13.02 and 13.03 of the General Conditions, having to do

with Change of Contract Price. Changes in contract price will be governed by the section called "Change Orders," in Attachment D, Section 00830 and Article 13 in the Supplementary Conditions.

11. Payments

Add the following paragraph after Paragraph 15.01B.4 of the General Conditions:

“5. The Contractor shall submit Weekly Payroll Records Report and Statement of Compliance verifying compliance with the Minimum Prevailing Wage Law, MGL c. 149, §26-27H. These Statements of Compliance shall be submitted as a condition of payment for work performed during the period the reports apply.”

Delete paragraph 15.01C.1 of the General Conditions in its entirety and insert the following in its place:

“1. Progress Payments will be made in accordance with MGL c. 30, §39G, or §39K, as applicable.”

Delete paragraph 15.01D.1 of the General Conditions in its entirety and replace it with the following:

“1. Payment shall be made in accordance with MGL c. 30, §39G, or §39K, as applicable.”

Add the following new paragraph following paragraph 15.01D.1 of the General Conditions:

“2. The Contractor shall make payments to Subcontractors in accordance with the requirements of MGL c. 30, §39F.”

Delete paragraph 15.06B of the General Conditions in its entirety and insert the following in its place:

"Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of the Engineer's observation of the Work during construction and final inspection and, upon the Engineer's review of the final Application for Payment and accompanying documentation, the Engineer is satisfied that the Work has been completed and that the Contractor's other obligations under the Contract Documents have been fulfilled, the Engineer will indicate in writing its recommendation of payment and present the Application to the Awarding Authority for payment. Thereupon the Engineer will give written notice to the Awarding Authority and the Contractor that the Work is acceptable subject to the provisions of paragraph 15.07. Otherwise, the Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment. In such case the Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, the Awarding Authority shall in accordance with the applicable provisions of the Massachusetts General Laws, make payment to the Contractor."

Delete paragraph 15.06E of the General Conditions in its entirety and replace it with the following:

“1. Payment shall be made in accordance with MGL c. 30, §39G, or §39K, as applicable.”

12. Suspension of Work and Termination

Delete paragraph 16.01A of the General Conditions in its entirety and insert the following in its place:

"A. The Awarding Authority may order, at any time and without cause, the Contractor to suspend or delay the Work in accordance with MGL c. 30, §39O."

13. Special Requirements for Hazardous Wastes Contracts

Add the following at the end of the first sentence of Paragraph 18.14 of the General Conditions:

“, and to the “Rules and Regulations for the Prevention of Accidents in Construction Operations Chapter 454 CMR (Code of Massachusetts Regulations) 10.00 et seq.”

14. Labor Classifications and Prevailing Wage Rates

Add the following paragraphs under the heading "Prevailing Wage Rates" after paragraph 18.14 of the Supplementary Conditions:

"18.15 Prevailing Wage Rates

- A. Prevailing Wage Rates as determined by the Director of the Executive Office of Labor and Workforce Development under the provisions of MGL c. 149, §26-27H apply to this project. A copy of the wage schedule is included in Attachment A of Section 00830. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the Director. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. The Contractor shall notify the Awarding Authority of its intention to employ persons in trades or occupations not classified in the wage determinations as soon as possible in order to allow sufficient time for the Awarding Authority to obtain approved rates for such trades or occupations.
- B. The schedule of wages referred to above are minimum rates only, and the Awarding Authority will not consider any claims for additional compensation made by Contractor because of payment by the Contractor of any wage rate in excess of the applicable rate contained in the Contract.
- C. The said schedule of wages shall continue to be the minimum rates to be paid during the life of this Agreement, except in the case of the duration of this Agreement exceeding one year, when the Contractor will be responsible for requesting and

obtaining updated prevailing wage rates from the Owner before the one-year anniversary of the project's start date, and a legible copy of said schedule shall be kept posted in a conspicuous place at the site of the Work.

- D. Contractor and subcontractors shall submit a copy of weekly payroll records to the Awarding Authority and the Awarding Authority shall retain the records for a minimum of three years."

15. Contractor's Surety

Add the following sentences at the end of paragraph 6.01A:

"The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The Contractor shall pay the premiums for such Bonds."

B. OTHER REGULATORY REQUIREMENTS:

1. Working Hours

No laborer, workman, mechanic, foreman, or inspector, working within the Commonwealth, in the employ of the Contractor, subcontractor, or other person doing or contracting to do the whole or a part of the work contemplated by this contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.

2. DEP Community Sound Level Criteria

The Community Sound Level Criteria as established by the Commonwealth of Massachusetts' Department of Environmental Protection (DEP) must be conformed to prior to the Awarding Authority's acceptance of the structure. The following sound level criteria must be met at the construction site:

- A. The increase in the broadband noise level shall not be in excess of ten (10) dB(A) above ambient at the station boundary. The ambient level is defined as the A-weighted noise level that is exceeded ninety (90) percent of the time measured during the period in question.
- B. The primary noise source(s) shall not produce a puretone condition. Puretone is any given octave band center frequency that exceeds the two adjacent center frequencies by three (3) or more decibels.

3. OSHA 10 Hour Certification Requirements

All employees of the Contractor who work at the jobsite must have received OSHA 10 Hour safety training, and have proof, at the jobsite, of being certified by OSHA as having received the training. The Contractor must provide written proof (copy of OSHA card each employee

is required to carry is preferred) of this certification for every employee with submission of the first certified payroll report for each employee.

END OF SECTION

SECTION 00 83 00

ATTACHMENT A

PREVAILING WAGE RATES

THE MASSACHUSETTS PREVAILING WAGE LAW

M.G.L. C. 149, §§26-27

NOTICE TO AWARDING AUTHORITIES

- A. The enclosed wage schedule applies only to the specific project listed at the top of the schedule, and these rates will remain in effect for the duration of the project, except in the case of multi-year projects. For projects lasting longer than one year, awarding authorities must request updated rates.
- B. You should request an updated wage schedule from the Department of Labor Standards if you have not opened bids or selected a contractor within 90 days of the date of issuance of the enclosed wage schedule.
- C. The wage schedule shall be incorporated in any advertisement or call for bids for the project for which it has been issued.
- D. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project.

NOTICE TO CONTRACTORS

- E. The enclosed wage schedule must be posted in a conspicuous place at the work site during the life of the project.
- F. The wages listed on the enclosed wage schedule must be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- G. The enclosed wage schedule applies to all phases of the project, including the final clean-up. Contractors whose only role is to perform final clean-up must pay their employees according to this wage schedule.
- H. All apprentices must be registered with the Massachusetts Division of Apprenticeship Standards (DAS) in order to be paid at the lower apprentice rates. All apprentices must keep his/her apprentice identification card on his/her person during all work hours. If a worker is not registered with DAS, they must be paid the "total rate" listed on the wage schedule regardless of experience or skill level. For further information, please call 617-626-5409, or write to:

DAS
19 Staniford Street, 1st Floor
P.O. Box 146759
Boston, MA 0211

WEEKLY STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or email, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

WEEKLY STATEMENT OF COMPLIANCE

_____, 20____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

WEEKLY CERTIFIED PAYROLL REPORT AND WORKFORCE PARTICIPATION FORM

CERTIFIED PAYROLL REPORT: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a true and accurate copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

WORKFORCE PARTICIPATION GOALS: The Commonwealth of Massachusetts has set the following goals for workforce participation for minorities and women. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The Contractor shall strive to achieve on this project the labor workforce participation goals contained herein. The Contractor shall enter the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority below.

Company Name:					Address:					Phone No.:					Payroll No.:									
Employer's Signature:					Title:					Contract No:		Tax Payer ID #:		Work Week Ending:										
Awarding Authority Name:					Public Works Project Name:					Public Works Project Location:					Min. Wage Rate Sheet Number:									
General / Prime Contractor's Name:					Subcontractor's Name:										Employer Hourly Fringe Benefit Contributions									
															(B+C+D+E) (A x F)									
Employee Name & Complete Address		Work Classification	Project Hours Non-Minority	Project Hours Minority	Project Hours Women	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked								Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	Project Gross Wages Total Gross Wages	Check No. (H)	
								Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.										

APPRENTICESHIP DOCUMENTATION:

Please answer the questions below.

(1) Are any apprentice employees identified above?

(2) If yes, are all apprentice employees identified above currently registered with the MA DLS Division of Apprentice Standards?

(3) If yes, is a copy of the apprentice ID card issued by the MA DLS Division of Apprentice Standards included for all apprentice employees identified above?

YES

YES

YES

NO

NO

NO



MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Town of Arlington
Contract Number: 24-15 **City/Town:** ARLINGTON
Description of Work: 24-15 Brackett Elementary School Playground Renovation. Work includes renovation of the playground, basketball court, kindergarten play area, and outdoor learning spaces.
Job Location: 66 Eastern Ave, Arlington, MA

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.05	\$14.41	\$18.67	\$0.00	\$73.13
	06/01/2024	\$41.05	\$14.41	\$18.67	\$0.00	\$74.13
	08/01/2024	\$41.05	\$14.91	\$18.67	\$0.00	\$74.63
	12/01/2024	\$41.05	\$14.91	\$20.17	\$0.00	\$76.13
	06/01/2025	\$42.05	\$14.91	\$20.17	\$0.00	\$77.13
	08/01/2025	\$42.05	\$15.41	\$20.17	\$0.00	\$77.63
	12/01/2025	\$42.05	\$15.41	\$21.78	\$0.00	\$79.24
	06/01/2026	\$43.05	\$15.41	\$21.78	\$0.00	\$80.24
	08/01/2026	\$43.05	\$15.91	\$21.78	\$0.00	\$80.74
	12/01/2026	\$43.05	\$15.91	\$23.52	\$0.00	\$82.48
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.12	\$14.41	\$18.67	\$0.00	\$73.20
	06/01/2024	\$40.88	\$14.41	\$18.67	\$0.00	\$73.96
	08/01/2024	\$40.88	\$14.91	\$18.67	\$0.00	\$74.46
	12/01/2024	\$40.88	\$14.91	\$20.17	\$0.00	\$75.96
	06/01/2025	\$41.12	\$14.91	\$20.17	\$0.00	\$76.20
	08/01/2025	\$41.12	\$15.41	\$20.17	\$0.00	\$76.70
	12/01/2025	\$41.12	\$15.41	\$21.78	\$0.00	\$78.31
	06/01/2026	\$43.12	\$15.41	\$21.78	\$0.00	\$80.31
	08/01/2026	\$43.12	\$15.91	\$21.78	\$0.00	\$80.81
	12/01/2026	\$43.12	\$15.91	\$23.52	\$0.00	\$82.55
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.24	\$14.41	\$18.67	\$0.00	\$73.32
	06/01/2024	\$41.24	\$14.41	\$18.67	\$0.00	\$74.32
	08/01/2024	\$41.24	\$14.91	\$18.67	\$0.00	\$74.82
	12/01/2024	\$41.24	\$14.91	\$20.17	\$0.00	\$76.32
	06/01/2025	\$42.24	\$14.91	\$20.17	\$0.00	\$77.32
	08/01/2025	\$42.24	\$15.41	\$20.17	\$0.00	\$77.82
	12/01/2025	\$42.24	\$15.41	\$21.78	\$0.00	\$79.43
	06/01/2026	\$43.24	\$15.41	\$21.78	\$0.00	\$80.43
	08/01/2026	\$43.24	\$15.91	\$21.78	\$0.00	\$80.93
	12/01/2026	\$43.24	\$15.91	\$23.52	\$0.00	\$82.67
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
	06/01/2024	\$46.56	\$9.65	\$18.07	\$0.00	\$74.28
	12/01/2024	\$48.03	\$9.65	\$18.07	\$0.00	\$75.75
	06/01/2025	\$49.53	\$9.65	\$18.07	\$0.00	\$77.25
	12/01/2025	\$51.03	\$9.65	\$18.07	\$0.00	\$78.75
	06/01/2026	\$52.58	\$9.65	\$18.07	\$0.00	\$80.30
	12/01/2026	\$54.08	\$9.65	\$18.07	\$0.00	\$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2023	\$40.80	\$14.50	\$11.05	\$0.00	\$66.35
	06/01/2024	\$41.80	\$14.50	\$11.05	\$0.00	\$67.35
	12/01/2024	\$42.80	\$14.50	\$11.05	\$0.00	\$68.35
	06/01/2025	\$43.80	\$14.50	\$11.05	\$0.00	\$69.35
	12/01/2025	\$44.80	\$14.50	\$11.05	\$0.00	\$70.35
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
	06/01/2024	\$46.56	\$9.65	\$18.07	\$0.00	\$74.28
	12/01/2024	\$48.03	\$9.65	\$18.07	\$0.00	\$75.75
	06/01/2025	\$49.53	\$9.65	\$18.07	\$0.00	\$77.25
	12/01/2025	\$51.03	\$9.65	\$18.07	\$0.00	\$78.75
	06/01/2026	\$52.58	\$9.65	\$18.07	\$0.00	\$80.30
	12/01/2026	\$54.08	\$9.65	\$18.07	\$0.00	\$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - BOILERMAKER - Local 29								
Effective Date - 01/01/2024								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	65	\$31.28		\$7.07	\$13.22	\$0.00	\$51.57	
2	65	\$31.28		\$7.07	\$13.22	\$0.00	\$51.57	
3	70	\$33.68		\$7.07	\$14.23	\$0.00	\$54.98	
4	75	\$36.09		\$7.07	\$15.24	\$0.00	\$58.40	
5	80	\$38.50		\$7.07	\$16.25	\$0.00	\$61.82	
6	85	\$40.90		\$7.07	\$17.28	\$0.00	\$65.25	
7	90	\$43.31		\$7.07	\$18.28	\$0.00	\$68.66	
8	95	\$45.71		\$7.07	\$19.32	\$0.00	\$72.10	
Notes:								
Apprentice to Journeyworker Ratio:1:4								
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)			02/01/2024	\$62.40	\$11.49	\$23.59	\$0.00	\$97.48
BRICKLAYERS LOCAL 3 (BOSTON)			08/01/2024	\$64.50	\$11.49	\$23.59	\$0.00	\$99.58
			02/01/2025	\$65.80	\$11.49	\$23.59	\$0.00	\$100.88
			08/01/2025	\$67.95	\$11.49	\$23.59	\$0.00	\$103.03
			02/01/2026	\$69.30	\$11.49	\$23.59	\$0.00	\$104.38
			08/01/2026	\$71.50	\$11.49	\$23.59	\$0.00	\$106.58
			02/01/2027	\$72.90	\$11.49	\$23.59	\$0.00	\$107.98

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Boston

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.20	\$11.49	\$23.59	\$0.00	\$66.28
2	60	\$37.44	\$11.49	\$23.59	\$0.00	\$72.52
3	70	\$43.68	\$11.49	\$23.59	\$0.00	\$78.76
4	80	\$49.92	\$11.49	\$23.59	\$0.00	\$85.00
5	90	\$56.16	\$11.49	\$23.59	\$0.00	\$91.24

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.25	\$11.49	\$23.59	\$0.00	\$67.33
2	60	\$38.70	\$11.49	\$23.59	\$0.00	\$73.78
3	70	\$45.15	\$11.49	\$23.59	\$0.00	\$80.23
4	80	\$51.60	\$11.49	\$23.59	\$0.00	\$86.68
5	90	\$58.05	\$11.49	\$23.59	\$0.00	\$93.13

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN	12/01/2023	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$46.96	\$9.65	\$18.22	\$0.00	\$74.83
	12/01/2024	\$48.43	\$9.65	\$18.22	\$0.00	\$76.30
	06/01/2025	\$49.93	\$9.65	\$18.22	\$0.00	\$77.80
	12/01/2025	\$51.43	\$9.65	\$18.22	\$0.00	\$79.30
	06/01/2026	\$52.98	\$9.65	\$18.22	\$0.00	\$80.85
	12/01/2026	\$54.48	\$9.65	\$18.22	\$0.00	\$82.35

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						

CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						

CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2024	\$47.12	\$9.83	\$19.97	\$0.00	\$76.92
	09/01/2024	\$48.37	\$9.83	\$19.97	\$0.00	\$78.17
	03/01/2025	\$49.62	\$9.83	\$19.97	\$0.00	\$79.42
	09/01/2025	\$50.87	\$9.83	\$19.97	\$0.00	\$80.67
	03/01/2026	\$52.12	\$9.83	\$19.97	\$0.00	\$81.92
	09/01/2026	\$53.37	\$9.83	\$19.97	\$0.00	\$83.17
	03/01/2027	\$54.62	\$9.83	\$19.97	\$0.00	\$84.42

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
2	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
3	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
4	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
5	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
6	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
7	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77
8	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
2	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
3	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
4	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
5	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
6	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
7	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77
8	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
2	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
3	65	\$16.61	\$7.02	\$1.00	\$0.00	\$24.63
4	70	\$17.89	\$7.02	\$1.00	\$0.00	\$25.91
5	75	\$19.16	\$7.02	\$4.80	\$0.00	\$30.98
6	80	\$20.44	\$7.02	\$4.80	\$0.00	\$32.26
7	85	\$21.72	\$7.02	\$4.80	\$0.00	\$33.54
8	90	\$23.00	\$7.02	\$4.80	\$0.00	\$34.82

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
2	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
3	65	\$17.32	\$7.02	\$1.00	\$0.00	\$25.34
4	70	\$18.66	\$7.02	\$1.00	\$0.00	\$26.68
5	75	\$19.99	\$7.02	\$4.80	\$0.00	\$31.81
6	80	\$21.32	\$7.02	\$4.80	\$0.00	\$33.14
7	85	\$22.65	\$7.02	\$4.80	\$0.00	\$34.47
8	90	\$23.99	\$7.02	\$4.80	\$0.00	\$35.81

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$18.52/ 3&4 \$21.07/ 5&6 \$28.70/ 7&8 \$31.26

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING	01/01/2024	\$49.33	\$13.00	\$23.57	\$1.30	\$87.20
BRICKLAYERS LOCAL 3 (BOSTON)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Boston)						
Effective Date - 01/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$13.00	\$15.93	\$0.00	\$53.60
2	60	\$29.60	\$13.00	\$18.57	\$1.30	\$62.47
3	65	\$32.06	\$13.00	\$19.57	\$1.30	\$65.93
4	70	\$34.53	\$13.00	\$20.57	\$1.30	\$69.40
5	75	\$37.00	\$13.00	\$21.57	\$1.30	\$72.87
6	80	\$39.46	\$13.00	\$22.57	\$1.30	\$76.33
7	90	\$44.40	\$13.00	\$23.57	\$1.30	\$82.27
Notes: Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.						
Apprentice to Journeyworker Ratio:1:3						
CHAIN SAW OPERATOR LABORERS - ZONE 1	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	12/01/2023	\$56.13	\$15.00	\$16.40	\$0.00	\$87.53
	06/01/2024	\$57.15	\$15.30	\$16.40	\$0.00	\$88.85
	12/01/2024	\$58.63	\$15.30	\$16.40	\$0.00	\$90.33
	06/01/2025	\$59.96	\$15.30	\$16.40	\$0.00	\$91.66
	12/01/2025	\$61.43	\$15.30	\$16.40	\$0.00	\$93.13
	06/01/2026	\$62.76	\$15.30	\$16.40	\$0.00	\$94.46
	12/01/2026	\$64.24	\$15.30	\$16.40	\$0.00	\$95.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 1	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 1	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 1	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 1	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER LABORERS - ZONE 1	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$24.74	\$13.00	\$0.74	\$0.00	\$38.48
2	40	\$24.74	\$13.00	\$0.74	\$0.00	\$38.48
3	45	\$27.84	\$13.00	\$16.67	\$0.00	\$57.51
4	45	\$27.84	\$13.00	\$16.67	\$0.00	\$57.51
5	50	\$30.93	\$13.00	\$17.17	\$0.00	\$61.10
6	55	\$34.02	\$13.00	\$17.67	\$0.00	\$64.69
7	60	\$37.12	\$13.00	\$18.17	\$0.00	\$68.29
8	65	\$40.21	\$13.00	\$18.68	\$0.00	\$71.89
9	70	\$43.30	\$13.00	\$19.18	\$0.00	\$75.48
10	75	\$46.40	\$13.00	\$19.69	\$0.00	\$79.09

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$25.51	\$13.00	\$0.77	\$0.00	\$39.28
2	40	\$25.51	\$13.00	\$0.77	\$0.00	\$39.28
3	45	\$28.70	\$13.00	\$16.69	\$0.00	\$58.39
4	45	\$28.70	\$13.00	\$16.69	\$0.00	\$58.39
5	50	\$31.89	\$13.00	\$17.20	\$0.00	\$62.09
6	55	\$35.08	\$13.00	\$17.70	\$0.00	\$65.78
7	60	\$38.27	\$13.00	\$18.21	\$0.00	\$69.48
8	65	\$41.46	\$13.00	\$18.71	\$0.00	\$73.17
9	70	\$44.65	\$13.00	\$19.22	\$0.00	\$76.87
10	75	\$47.84	\$13.00	\$19.74	\$0.00	\$80.58

Notes: :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
ELEVATOR CONSTRUCTORS LOCAL 4						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ELEVATOR CONSTRUCTOR - Local 4						
Effective Date - 01/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74
Notes: Steps 1-2 are 6 mos.; Steps 3-5 are 1 year						
Apprentice to Journeyworker Ratio:1:1						
ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$51.54	\$14.50	\$16.15	\$0.00	\$82.19
	11/01/2024	\$52.83	\$14.50	\$16.15	\$0.00	\$83.48
	05/01/2025	\$54.27	\$14.50	\$16.15	\$0.00	\$84.92
	11/01/2025	\$55.56	\$14.50	\$16.15	\$0.00	\$86.21
	05/01/2026	\$57.00	\$14.50	\$16.15	\$0.00	\$87.65
	11/01/2026	\$58.29	\$14.50	\$16.15	\$0.00	\$88.94
	05/01/2027	\$59.72	\$14.50	\$16.15	\$0.00	\$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$53.12	\$14.50	\$16.15	\$0.00	\$83.77
	11/01/2024	\$54.42	\$14.50	\$16.15	\$0.00	\$85.07
	05/01/2025	\$55.87	\$14.50	\$16.15	\$0.00	\$86.52
	11/01/2025	\$57.17	\$14.50	\$16.15	\$0.00	\$87.82
	05/01/2026	\$58.62	\$14.50	\$16.15	\$0.00	\$89.27
	11/01/2026	\$59.92	\$14.50	\$16.15	\$0.00	\$90.57
	05/01/2027	\$61.37	\$14.50	\$16.15	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG. ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$25.66	\$14.50	\$16.15	\$0.00	\$56.31
	11/01/2024	\$26.42	\$14.50	\$16.15	\$0.00	\$57.07
	05/01/2025	\$27.27	\$14.50	\$16.15	\$0.00	\$57.92
	11/01/2025	\$28.03	\$14.50	\$16.15	\$0.00	\$58.68
	05/01/2026	\$28.88	\$14.50	\$16.15	\$0.00	\$59.53
	11/01/2026	\$29.64	\$14.50	\$16.15	\$0.00	\$60.29
	05/01/2027	\$30.49	\$14.50	\$16.15	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2024	\$49.49	\$13.00	\$20.19	\$0.00	\$82.68
	09/01/2024	\$51.02	\$13.00	\$20.24	\$0.00	\$84.26
	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$44.47	\$15.00	\$16.40	\$0.00	\$75.87
	06/01/2024	\$45.23	\$15.30	\$16.40	\$0.00	\$76.93
	12/01/2024	\$46.41	\$15.30	\$16.40	\$0.00	\$78.11
	06/01/2025	\$47.47	\$15.30	\$16.40	\$0.00	\$79.17
	12/01/2025	\$48.64	\$15.30	\$16.40	\$0.00	\$80.34
	06/01/2026	\$49.70	\$15.30	\$16.40	\$0.00	\$81.40
	12/01/2026	\$50.88	\$15.30	\$16.40	\$0.00	\$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$25.48	\$9.65	\$18.07	\$0.00	\$53.20
	06/01/2024	\$26.51	\$9.65	\$18.07	\$0.00	\$54.23
	12/01/2024	\$26.51	\$9.65	\$18.07	\$0.00	\$54.23
	06/01/2025	\$27.59	\$9.65	\$18.07	\$0.00	\$55.31
	12/01/2025	\$27.59	\$9.65	\$18.07	\$0.00	\$55.31
	06/01/2026	\$28.71	\$9.65	\$18.07	\$0.00	\$56.43
	12/01/2026	\$28.71	\$9.65	\$18.07	\$0.00	\$56.43
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FLOORCOVERER	03/01/2024	\$54.73	\$8.83	\$20.27	\$0.00	\$83.83
FLOORCOVERERS LOCAL 2168 ZONE I	09/01/2024	\$56.23	\$8.83	\$20.27	\$0.00	\$85.33
	03/01/2025	\$57.73	\$8.83	\$20.27	\$0.00	\$86.83
	09/01/2025	\$59.23	\$8.83	\$20.27	\$0.00	\$88.33
	03/01/2026	\$60.73	\$8.83	\$20.27	\$0.00	\$89.83
	09/01/2026	\$62.23	\$8.83	\$20.27	\$0.00	\$91.33
	03/01/2027	\$63.73	\$8.83	\$20.27	\$0.00	\$92.83

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
2	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
3	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
4	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
5	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
6	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
7	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12
8	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
2	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
3	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
4	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
5	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
6	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
7	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32
8	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32

Notes: Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2024	\$45.56	\$9.95	\$23.95	\$0.00	\$79.46
	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$9.95	\$0.00	\$0.00	\$32.73
2	55	\$25.06	\$9.95	\$6.66	\$0.00	\$41.67
3	60	\$27.34	\$9.95	\$7.26	\$0.00	\$44.55
4	65	\$29.61	\$9.95	\$7.87	\$0.00	\$47.43
5	70	\$31.89	\$9.95	\$20.32	\$0.00	\$62.16
6	75	\$34.17	\$9.95	\$20.93	\$0.00	\$65.05
7	80	\$36.45	\$9.95	\$21.53	\$0.00	\$67.93
8	90	\$41.00	\$9.95	\$22.74	\$0.00	\$73.69

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.27	\$15.30	\$0.00	\$0.00	\$45.57
2	60	\$33.02	\$15.30	\$16.40	\$0.00	\$64.72
3	65	\$35.77	\$15.30	\$16.40	\$0.00	\$67.47
4	70	\$38.52	\$15.30	\$16.40	\$0.00	\$70.22
5	75	\$41.27	\$15.30	\$16.40	\$0.00	\$72.97
6	80	\$44.02	\$15.30	\$16.40	\$0.00	\$75.72
7	85	\$46.78	\$15.30	\$16.40	\$0.00	\$78.48
8	90	\$49.53	\$15.30	\$16.40	\$0.00	\$81.23

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.82	\$15.30	\$0.00	\$0.00	\$46.12
2	60	\$33.62	\$15.30	\$16.40	\$0.00	\$65.32
3	65	\$36.42	\$15.30	\$16.40	\$0.00	\$68.12
4	70	\$39.22	\$15.30	\$16.40	\$0.00	\$70.92
5	75	\$42.02	\$15.30	\$16.40	\$0.00	\$73.72
6	80	\$44.82	\$15.30	\$16.40	\$0.00	\$76.52
7	85	\$47.63	\$15.30	\$16.40	\$0.00	\$79.33
8	90	\$50.43	\$15.30	\$16.40	\$0.00	\$82.13

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK)	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS)	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
ELECTRICIANS LOCAL 103	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89

For apprentice rates see "Apprentice- ELECTRICIAN"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING - WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$45.08	\$9.65	\$18.07	\$0.00	\$72.80
	06/01/2024	\$46.56	\$9.65	\$18.07	\$0.00	\$74.28
	12/01/2024	\$48.03	\$9.65	\$18.07	\$0.00	\$75.75
	06/01/2025	\$49.53	\$9.65	\$18.07	\$0.00	\$77.25
	12/01/2025	\$51.03	\$9.65	\$18.07	\$0.00	\$78.75
	06/01/2026	\$52.58	\$9.65	\$18.07	\$0.00	\$80.30
	12/01/2026	\$54.08	\$9.65	\$18.07	\$0.00	\$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2023	\$53.50	\$14.75	\$19.61	\$0.00	\$87.86
	09/01/2024	\$56.92	\$14.75	\$19.61	\$0.00	\$91.28
	09/01/2025	\$60.34	\$14.75	\$19.61	\$0.00	\$94.70
	09/01/2026	\$63.76	\$14.75	\$19.61	\$0.00	\$98.12

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.75	\$14.75	\$14.32	\$0.00	\$55.82
2	60	\$32.10	\$14.75	\$15.37	\$0.00	\$62.22
3	70	\$37.45	\$14.75	\$16.43	\$0.00	\$68.63
4	80	\$42.80	\$14.75	\$17.49	\$0.00	\$75.04

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.46	\$14.75	\$14.32	\$0.00	\$57.53
2	60	\$34.15	\$14.75	\$15.37	\$0.00	\$64.27
3	70	\$39.84	\$14.75	\$16.43	\$0.00	\$71.02
4	80	\$45.54	\$14.75	\$17.49	\$0.00	\$77.78

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER	03/16/2024	\$53.97	\$8.35	\$26.70	\$0.00	\$89.02
IRONWORKERS LOCAL 7 (BOSTON AREA)						

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$32.38	\$8.35	\$26.70	\$0.00	\$67.43
2	70	\$37.78	\$8.35	\$26.70	\$0.00	\$72.83
3	75	\$40.48	\$8.35	\$26.70	\$0.00	\$75.53
4	80	\$43.18	\$8.35	\$26.70	\$0.00	\$78.23
5	85	\$45.87	\$8.35	\$26.70	\$0.00	\$80.92
6	90	\$48.57	\$8.35	\$26.70	\$0.00	\$83.62

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
LABORERS - ZONE 1						

For apprentice rates see "Apprentice- LABORER"

LABORER	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
LABORERS - ZONE 1						

Apprentice - LABORER - Zone 1

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.60	\$9.65	\$18.07	\$0.00	\$54.32
2	70	\$31.03	\$9.65	\$18.07	\$0.00	\$58.75
3	80	\$35.46	\$9.65	\$18.07	\$0.00	\$63.18
4	90	\$39.90	\$9.65	\$18.07	\$0.00	\$67.62

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
LABORERS - ZONE 1 (HEAVY & HIGHWAY)	06/01/2024	\$45.81	\$9.65	\$18.07	\$0.00	\$73.53
	12/01/2024	\$47.28	\$9.65	\$18.07	\$0.00	\$75.00
	06/01/2025	\$48.78	\$9.65	\$18.07	\$0.00	\$76.50
	12/01/2025	\$50.28	\$9.65	\$18.07	\$0.00	\$78.00
	06/01/2026	\$51.83	\$9.65	\$18.07	\$0.00	\$79.55
	12/01/2026	\$53.33	\$9.65	\$18.07	\$0.00	\$81.05

Apprentice - LABORER (Heavy & Highway) - Zone 1

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.60	\$9.65	\$18.07	\$0.00	\$54.32
2	70	\$31.03	\$9.65	\$18.07	\$0.00	\$58.75
3	80	\$35.46	\$9.65	\$18.07	\$0.00	\$63.18
4	90	\$39.90	\$9.65	\$18.07	\$0.00	\$67.62

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.49	\$9.65	\$18.07	\$0.00	\$55.21
2	70	\$32.07	\$9.65	\$18.07	\$0.00	\$59.79
3	80	\$36.65	\$9.65	\$18.07	\$0.00	\$64.37
4	90	\$41.23	\$9.65	\$18.07	\$0.00	\$68.95

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
LABORERS - ZONE 1						
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
LABORERS - ZONE 1						
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	06/01/2023	\$43.83	\$9.40	\$17.82	\$0.00	\$71.05
	06/01/2024	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2024	\$47.89	\$11.49	\$21.37	\$0.00	\$80.75
	08/01/2024	\$49.57	\$11.49	\$21.37	\$0.00	\$82.43
	02/01/2025	\$50.61	\$11.49	\$21.37	\$0.00	\$83.47
	08/01/2025	\$52.33	\$11.49	\$21.37	\$0.00	\$85.19
	02/01/2026	\$53.41	\$11.49	\$21.37	\$0.00	\$86.27
	08/01/2026	\$55.17	\$11.49	\$21.37	\$0.00	\$88.03
	02/01/2027	\$56.29	\$11.49	\$21.37	\$0.00	\$89.15

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$11.49	\$21.37	\$0.00	\$56.81
2	60	\$28.73	\$11.49	\$21.37	\$0.00	\$61.59
3	70	\$33.52	\$11.49	\$21.37	\$0.00	\$66.38
4	80	\$38.31	\$11.49	\$21.37	\$0.00	\$71.17
5	90	\$43.10	\$11.49	\$21.37	\$0.00	\$75.96

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.79	\$11.49	\$21.37	\$0.00	\$57.65
2	60	\$29.74	\$11.49	\$21.37	\$0.00	\$62.60
3	70	\$34.70	\$11.49	\$21.37	\$0.00	\$67.56
4	80	\$39.66	\$11.49	\$21.37	\$0.00	\$72.52
5	90	\$44.61	\$11.49	\$21.37	\$0.00	\$77.47

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	02/01/2024	\$62.42	\$11.49	\$23.56	\$0.00	\$97.47
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.21	\$11.49	\$23.56	\$0.00	\$66.26
2	60	\$37.45	\$11.49	\$23.56	\$0.00	\$72.50
3	70	\$43.69	\$11.49	\$23.56	\$0.00	\$78.74
4	80	\$49.94	\$11.49	\$23.56	\$0.00	\$84.99
5	90	\$56.18	\$11.49	\$23.56	\$0.00	\$91.23

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.26	\$11.49	\$23.56	\$0.00	\$67.31
2	60	\$38.71	\$11.49	\$23.56	\$0.00	\$73.76
3	70	\$45.16	\$11.49	\$23.56	\$0.00	\$80.21
4	80	\$51.62	\$11.49	\$23.56	\$0.00	\$86.67
5	90	\$58.07	\$11.49	\$23.56	\$0.00	\$93.12

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1)	01/01/2024	\$48.03	\$10.08	\$21.72	\$0.00	\$79.83
MILLWRIGHTS LOCAL 1121 - Zone 1	01/06/2025	\$50.53	\$10.08	\$21.72	\$0.00	\$82.33
	01/05/2026	\$53.03	\$10.08	\$21.72	\$0.00	\$84.83

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 1						
Effective Date - 01/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.42	\$10.08	\$5.64	\$0.00	\$42.14
2	65	\$31.22	\$10.08	\$6.66	\$0.00	\$47.96
3	75	\$36.02	\$10.08	\$19.16	\$0.00	\$65.26
4	85	\$40.83	\$10.08	\$20.18	\$0.00	\$71.09
Effective Date - 01/06/2025						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$27.79	\$10.08	\$5.64	\$0.00	\$43.51
2	65	\$32.84	\$10.08	\$6.66	\$0.00	\$49.58
3	75	\$37.90	\$10.08	\$19.16	\$0.00	\$67.14
4	85	\$42.95	\$10.08	\$20.18	\$0.00	\$73.21
<div> Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66) Steps are 2,000 hours </div>						
Apprentice to Journeyworker Ratio:1:4						
MORTAR MIXER LABORERS - ZONE 1	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2023	\$24.41	\$15.00	\$16.40	\$0.00	\$55.81
	06/01/2024	\$24.71	\$15.30	\$16.40	\$0.00	\$56.41
	12/01/2024	\$25.37	\$15.30	\$16.40	\$0.00	\$57.07
	06/01/2025	\$25.97	\$15.30	\$16.40	\$0.00	\$57.67
	12/01/2025	\$26.63	\$15.30	\$16.40	\$0.00	\$58.33
	06/01/2026	\$27.22	\$15.30	\$16.40	\$0.00	\$58.92
	12/01/2026	\$27.89	\$15.30	\$16.40	\$0.00	\$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2023	\$29.86	\$15.00	\$16.40	\$0.00	\$61.26
	06/01/2024	\$30.28	\$15.30	\$16.40	\$0.00	\$61.98
	12/01/2024	\$31.08	\$15.30	\$16.40	\$0.00	\$62.78
	06/01/2025	\$31.80	\$15.30	\$16.40	\$0.00	\$63.50
	12/01/2025	\$32.60	\$15.30	\$16.40	\$0.00	\$64.30
	06/01/2026	\$33.32	\$15.30	\$16.40	\$0.00	\$65.02
	12/01/2026	\$34.12	\$15.30	\$16.40	\$0.00	\$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2024	\$46.96	\$9.95	\$23.95	\$0.00	\$80.86
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2024	\$48.16	\$9.95	\$23.95	\$0.00	\$82.06
	01/01/2025	\$49.36	\$9.95	\$23.95	\$0.00	\$83.26

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New								
Effective Date -			01/01/2024					
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	50	\$23.48		\$9.95	\$0.00	\$0.00	\$33.43	
2	55	\$25.83		\$9.95	\$6.66	\$0.00	\$42.44	
3	60	\$28.18		\$9.95	\$7.26	\$0.00	\$45.39	
4	65	\$30.52		\$9.95	\$7.87	\$0.00	\$48.34	
5	70	\$32.87		\$9.95	\$20.32	\$0.00	\$63.14	
6	75	\$35.22		\$9.95	\$20.93	\$0.00	\$66.10	
7	80	\$37.57		\$9.95	\$21.53	\$0.00	\$69.05	
8	90	\$42.26		\$9.95	\$22.74	\$0.00	\$74.95	
Effective Date -			07/01/2024					
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	50	\$24.08		\$9.95	\$0.00	\$0.00	\$34.03	
2	55	\$26.49		\$9.95	\$6.66	\$0.00	\$43.10	
3	60	\$28.90		\$9.95	\$7.26	\$0.00	\$46.11	
4	65	\$31.30		\$9.95	\$7.87	\$0.00	\$49.12	
5	70	\$33.71		\$9.95	\$20.32	\$0.00	\$63.98	
6	75	\$36.12		\$9.95	\$20.93	\$0.00	\$67.00	
7	80	\$38.53		\$9.95	\$21.53	\$0.00	\$70.01	
8	90	\$43.34		\$9.95	\$22.74	\$0.00	\$76.03	
Notes:								
Steps are 750 hrs.								
Apprentice to Journeyworker Ratio:1:1								
PAINTER (SPRAY OR SANDBLAST, REPAINT)			01/01/2024	\$45.02	\$9.95	\$23.95	\$0.00	\$78.92
PAINTERS LOCAL 35 - ZONE 2			07/01/2024	\$46.22	\$9.95	\$23.95	\$0.00	\$80.12
			01/01/2025	\$47.42	\$9.95	\$23.95	\$0.00	\$81.32

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$9.95	\$0.00	\$0.00	\$32.46
2	55	\$24.76	\$9.95	\$6.66	\$0.00	\$41.37
3	60	\$27.01	\$9.95	\$7.26	\$0.00	\$44.22
4	65	\$29.26	\$9.95	\$7.87	\$0.00	\$47.08
5	70	\$31.51	\$9.95	\$20.32	\$0.00	\$61.78
6	75	\$33.77	\$9.95	\$20.93	\$0.00	\$64.65
7	80	\$36.02	\$9.95	\$21.53	\$0.00	\$67.50
8	90	\$40.52	\$9.95	\$22.74	\$0.00	\$73.21

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.11	\$9.95	\$0.00	\$0.00	\$33.06
2	55	\$25.42	\$9.95	\$6.66	\$0.00	\$42.03
3	60	\$27.73	\$9.95	\$7.26	\$0.00	\$44.94
4	65	\$30.04	\$9.95	\$7.87	\$0.00	\$47.86
5	70	\$32.35	\$9.95	\$20.32	\$0.00	\$62.62
6	75	\$34.67	\$9.95	\$20.93	\$0.00	\$65.55
7	80	\$36.98	\$9.95	\$21.53	\$0.00	\$68.46
8	90	\$41.60	\$9.95	\$22.74	\$0.00	\$74.29

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2024	\$45.56	\$9.95	\$23.95	\$0.00	\$79.46
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$9.95	\$0.00	\$0.00	\$32.73
2	55	\$25.06	\$9.95	\$6.66	\$0.00	\$41.67
3	60	\$27.34	\$9.95	\$7.26	\$0.00	\$44.55
4	65	\$29.61	\$9.95	\$7.87	\$0.00	\$47.43
5	70	\$31.89	\$9.95	\$20.32	\$0.00	\$62.16
6	75	\$34.17	\$9.95	\$20.93	\$0.00	\$65.05
7	80	\$36.45	\$9.95	\$21.53	\$0.00	\$67.93
8	90	\$41.00	\$9.95	\$22.74	\$0.00	\$73.69

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2024	\$43.62	\$9.95	\$23.95	\$0.00	\$77.52
PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$44.82	\$9.95	\$23.95	\$0.00	\$78.72
	01/01/2025	\$46.02	\$9.95	\$23.95	\$0.00	\$79.92

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.81	\$9.95	\$0.00	\$0.00	\$31.76
2	55	\$23.99	\$9.95	\$6.66	\$0.00	\$40.60
3	60	\$26.17	\$9.95	\$7.26	\$0.00	\$43.38
4	65	\$28.35	\$9.95	\$7.87	\$0.00	\$46.17
5	70	\$30.53	\$9.95	\$20.32	\$0.00	\$60.80
6	75	\$32.72	\$9.95	\$20.93	\$0.00	\$63.60
7	80	\$34.90	\$9.95	\$21.53	\$0.00	\$66.38
8	90	\$39.26	\$9.95	\$22.74	\$0.00	\$71.95

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$9.95	\$0.00	\$0.00	\$32.36
2	55	\$24.65	\$9.95	\$6.66	\$0.00	\$41.26
3	60	\$26.89	\$9.95	\$7.26	\$0.00	\$44.10
4	65	\$29.13	\$9.95	\$7.87	\$0.00	\$46.95
5	70	\$31.37	\$9.95	\$20.32	\$0.00	\$61.64
6	75	\$33.62	\$9.95	\$20.93	\$0.00	\$64.50
7	80	\$35.86	\$9.95	\$21.53	\$0.00	\$67.34
8	90	\$40.34	\$9.95	\$22.74	\$0.00	\$73.03

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2023	\$44.33	\$9.65	\$18.07	\$0.00	\$72.05
	06/01/2024	\$45.81	\$9.65	\$18.07	\$0.00	\$73.53
	12/01/2024	\$47.28	\$9.65	\$18.07	\$0.00	\$75.00
	06/01/2025	\$48.78	\$9.65	\$18.07	\$0.00	\$76.50
	12/01/2025	\$50.28	\$9.65	\$18.07	\$0.00	\$78.00
	06/01/2026	\$51.83	\$9.65	\$18.07	\$0.00	\$79.55
	12/01/2026	\$53.33	\$9.65	\$18.07	\$0.00	\$81.05

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2023	\$39.88	\$14.41	\$18.67	\$0.00	\$72.96
	06/01/2024	\$40.88	\$14.41	\$18.67	\$0.00	\$73.96
	08/01/2024	\$40.88	\$14.91	\$18.67	\$0.00	\$74.46
	12/01/2024	\$40.88	\$14.91	\$20.17	\$0.00	\$75.96
	06/01/2025	\$41.88	\$14.91	\$20.17	\$0.00	\$76.96
	08/01/2025	\$41.88	\$15.41	\$20.17	\$0.00	\$77.46
	12/01/2025	\$41.88	\$15.41	\$21.78	\$0.00	\$79.07
	06/01/2026	\$42.88	\$15.41	\$21.78	\$0.00	\$80.07
	08/01/2026	\$42.88	\$15.91	\$21.78	\$0.00	\$80.57
	12/01/2026	\$42.88	\$15.91	\$23.52	\$0.00	\$82.31

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER <i>PIPEFITTERS LOCAL 537</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - PIPEFITTER - Local 537						
Effective Date - 03/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$26.11	\$12.70	\$9.05	\$0.00	\$47.86
2	45	\$29.38	\$12.70	\$21.80	\$0.00	\$63.88
3	60	\$39.17	\$12.70	\$21.80	\$0.00	\$73.67
4	70	\$45.70	\$12.70	\$21.80	\$0.00	\$80.20
5	80	\$52.22	\$12.70	\$21.80	\$0.00	\$86.72
Effective Date - 09/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$26.83	\$12.70	\$9.05	\$0.00	\$48.58
2	45	\$30.19	\$12.70	\$21.80	\$0.00	\$64.69
3	60	\$40.25	\$12.70	\$21.80	\$0.00	\$74.75
4	70	\$46.96	\$12.70	\$21.80	\$0.00	\$81.46
5	80	\$53.66	\$12.70	\$21.80	\$0.00	\$88.16
Notes: ** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr. Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)						
Apprentice to Journeyworker Ratio:**						
PIPELAYER	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
LABORERS - ZONE 1						
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY)	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
LABORERS - ZONE 1 (HEAVY & HIGHWAY)						
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PLUMBERS & GASFITTERS	03/03/2024	\$67.74	\$14.32	\$19.11	\$0.00	\$101.17
PLUMBERS & GASFITTERS LOCAL 12						
	09/01/2024	\$69.54	\$14.32	\$19.11	\$0.00	\$102.97
	03/02/2025	\$71.34	\$14.32	\$19.11	\$0.00	\$104.77

Classification		Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
Apprentice - PLUMBER/GASFITTER - Local 12								
Effective Date - 03/03/2024								
Step	percent		Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
1	35		\$23.71	\$14.32	\$6.88	\$0.00	\$44.91	
2	40		\$27.10	\$14.32	\$7.82	\$0.00	\$49.24	
3	55		\$37.26	\$14.32	\$10.65	\$0.00	\$62.23	
4	65		\$44.03	\$14.32	\$12.53	\$0.00	\$70.88	
5	75		\$50.81	\$14.32	\$14.41	\$0.00	\$79.54	
Effective Date - 09/01/2024								
Step	percent		Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
1	35		\$24.34	\$14.32	\$6.88	\$0.00	\$45.54	
2	40		\$27.82	\$14.32	\$7.82	\$0.00	\$49.96	
3	55		\$38.25	\$14.32	\$10.65	\$0.00	\$63.22	
4	65		\$45.20	\$14.32	\$12.53	\$0.00	\$72.05	
5	75		\$52.16	\$14.32	\$14.41	\$0.00	\$80.89	
<div>Notes: ** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr Step4 with lic\$69.00, Step5 with lic\$76.87</div>								
Apprentice to Journeyworker Ratio:**								
PNEUMATIC CONTROLS (TEMP.)			03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
PIPEFITTERS LOCAL 537			09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
			03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"								
PNEUMATIC DRILL/TOOL OPERATOR			12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
LABORERS - ZONE 1								
For apprentice rates see "Apprentice- LABORER"								
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)			12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
LABORERS - ZONE 1 (HEAVY & HIGHWAY)			06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
			12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
			06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
			12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
			06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
			12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"								
POWDERMAN & BLASTER			12/01/2023	\$45.33	\$9.65	\$18.07	\$0.00	\$73.05
LABORERS - ZONE 1								
For apprentice rates see "Apprentice- LABORER"								
POWDERMAN & BLASTER (HEAVY & HIGHWAY)			12/01/2023	\$45.33	\$9.65	\$18.07	\$0.00	\$73.05
LABORERS - ZONE 1 (HEAVY & HIGHWAY)			06/01/2024	\$46.81	\$9.65	\$18.07	\$0.00	\$74.53
			12/01/2024	\$48.28	\$9.65	\$18.07	\$0.00	\$76.00
			06/01/2025	\$49.78	\$9.65	\$18.07	\$0.00	\$77.50
			12/01/2025	\$51.28	\$9.65	\$18.07	\$0.00	\$79.00
			06/01/2026	\$52.83	\$9.65	\$18.07	\$0.00	\$80.55
			12/01/2026	\$54.33	\$9.65	\$18.07	\$0.00	\$82.05

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/12 (Drivers Hired After 4/30/2012) <i>TEAMSTERS 25 (Metro) - Aggregate</i>	08/01/2022	\$30.40	\$11.91	\$15.25	\$0.00	\$57.56
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 25 (Metro) - Aggregate</i>	08/01/2022	\$34.41	\$11.91	\$15.25	\$0.00	\$61.57
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofing Waterproofing &Roofing Dampproofg) ROOFERS LOCAL 33	02/01/2024	\$50.03	\$12.78	\$21.45	\$0.00	\$84.26
	08/01/2024	\$51.53	\$12.78	\$21.45	\$0.00	\$85.76
	02/01/2025	\$52.78	\$12.78	\$21.45	\$0.00	\$87.01
	08/01/2025	\$54.28	\$12.78	\$21.45	\$0.00	\$88.51
	02/01/2026	\$55.53	\$12.78	\$21.45	\$0.00	\$89.76

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.02	\$12.78	\$6.21	\$0.00	\$44.01
2	60	\$30.02	\$12.78	\$21.45	\$0.00	\$64.25
3	65	\$32.52	\$12.78	\$21.45	\$0.00	\$66.75
4	75	\$37.52	\$12.78	\$21.45	\$0.00	\$71.75
5	85	\$42.53	\$12.78	\$21.45	\$0.00	\$76.76

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.77	\$12.78	\$6.21	\$0.00	\$44.76
2	60	\$30.92	\$12.78	\$21.45	\$0.00	\$65.15
3	65	\$33.49	\$12.78	\$21.45	\$0.00	\$67.72
4	75	\$38.65	\$12.78	\$21.45	\$0.00	\$72.88
5	85	\$43.80	\$12.78	\$21.45	\$0.00	\$78.03

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2024	\$50.28	\$12.78	\$21.45	\$0.00	\$84.51
	08/01/2024	\$51.78	\$12.78	\$21.45	\$0.00	\$86.01
	02/01/2025	\$53.03	\$12.78	\$21.45	\$0.00	\$87.26
	08/01/2025	\$54.53	\$12.78	\$21.45	\$0.00	\$88.76
	02/01/2026	\$55.78	\$12.78	\$21.45	\$0.00	\$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
2	42	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
3	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
4	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
5	52	\$29.75	\$14.59	\$13.09	\$1.72	\$59.15
6	52	\$29.75	\$14.59	\$13.34	\$1.73	\$59.41
7	60	\$34.33	\$14.59	\$14.75	\$1.91	\$65.58
8	65	\$37.19	\$14.59	\$15.73	\$2.03	\$69.54
9	75	\$42.92	\$14.59	\$17.69	\$2.26	\$77.46
10	85	\$48.64	\$14.59	\$19.15	\$2.47	\$84.85

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
2	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
3	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
4	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
5	52	\$30.66	\$14.59	\$13.09	\$1.75	\$60.09
6	52	\$30.66	\$14.59	\$13.34	\$1.76	\$60.35
7	60	\$35.38	\$14.59	\$14.75	\$1.94	\$66.66
8	65	\$38.33	\$14.59	\$15.73	\$2.06	\$70.71
9	75	\$44.23	\$14.59	\$17.69	\$2.30	\$78.81
10	85	\$50.12	\$14.59	\$19.15	\$2.52	\$86.38

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS	12/01/2023	\$40.34	\$14.41	\$18.67	\$0.00	\$73.42
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2024	\$41.34	\$14.41	\$18.67	\$0.00	\$74.42
	08/01/2024	\$41.34	\$14.91	\$18.67	\$0.00	\$74.92
	12/01/2024	\$41.34	\$14.91	\$20.17	\$0.00	\$76.42
	06/01/2025	\$42.34	\$14.91	\$20.17	\$0.00	\$77.42
	08/01/2025	\$42.34	\$15.41	\$20.17	\$0.00	\$77.92
	12/01/2025	\$42.34	\$15.41	\$21.78	\$0.00	\$79.53
	06/01/2026	\$43.34	\$15.41	\$21.78	\$0.00	\$80.53
	08/01/2026	\$43.34	\$15.91	\$21.78	\$0.00	\$81.03
	12/01/2026	\$43.34	\$15.91	\$23.52	\$0.00	\$82.77

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.63	\$14.41	\$18.67	\$0.00	\$73.71
	06/01/2024	\$41.63	\$14.41	\$18.67	\$0.00	\$74.71
	08/01/2024	\$41.63	\$14.91	\$18.67	\$0.00	\$75.21
	12/01/2024	\$41.63	\$14.91	\$20.17	\$0.00	\$76.71
	06/01/2025	\$42.63	\$14.91	\$20.17	\$0.00	\$77.71
	08/01/2025	\$42.63	\$15.41	\$20.17	\$0.00	\$78.21
	12/01/2025	\$42.63	\$15.41	\$21.78	\$0.00	\$79.82
	06/01/2026	\$43.63	\$15.41	\$21.78	\$0.00	\$80.82
	08/01/2026	\$43.63	\$15.91	\$21.78	\$0.00	\$81.32
	12/01/2026	\$43.63	\$15.91	\$23.52	\$0.00	\$83.06
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2024	\$69.04	\$11.51	\$23.30	\$0.00	\$103.85
	10/01/2024	\$70.84	\$11.51	\$23.30	\$0.00	\$105.65
	03/01/2025	\$72.64	\$11.51	\$23.30	\$0.00	\$107.45

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.16	\$11.51	\$12.90	\$0.00	\$48.57
2	40	\$27.62	\$11.51	\$13.70	\$0.00	\$52.83
3	45	\$31.07	\$11.51	\$14.50	\$0.00	\$57.08
4	50	\$34.52	\$11.51	\$15.30	\$0.00	\$61.33
5	55	\$37.97	\$11.51	\$16.10	\$0.00	\$65.58
6	60	\$41.42	\$11.51	\$16.90	\$0.00	\$69.83
7	65	\$44.88	\$11.51	\$17.70	\$0.00	\$74.09
8	70	\$48.33	\$11.51	\$18.50	\$0.00	\$78.34
9	75	\$51.78	\$11.51	\$19.30	\$0.00	\$82.59
10	80	\$55.23	\$11.51	\$20.10	\$0.00	\$86.84

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.79	\$11.51	\$12.90	\$0.00	\$49.20
2	40	\$28.34	\$11.51	\$13.70	\$0.00	\$53.55
3	45	\$31.88	\$11.51	\$14.50	\$0.00	\$57.89
4	50	\$35.42	\$11.51	\$15.30	\$0.00	\$62.23
5	55	\$38.96	\$11.51	\$16.10	\$0.00	\$66.57
6	60	\$42.50	\$11.51	\$16.90	\$0.00	\$70.91
7	65	\$46.05	\$11.51	\$17.70	\$0.00	\$75.26
8	70	\$49.59	\$11.51	\$18.50	\$0.00	\$79.60
9	75	\$53.13	\$11.51	\$19.30	\$0.00	\$83.94
10	80	\$56.67	\$11.51	\$20.10	\$0.00	\$88.28

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2024	\$49.49	\$13.00	\$20.19	\$0.00	\$82.68
	09/01/2024	\$51.02	\$13.00	\$20.24	\$0.00	\$84.26
	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.27	\$13.00	\$0.67	\$0.00	\$35.94
2	45	\$22.27	\$13.00	\$0.67	\$0.00	\$35.94
3	50	\$24.75	\$13.00	\$16.16	\$0.00	\$53.91
4	50	\$24.75	\$13.00	\$16.16	\$0.00	\$53.91
5	55	\$27.22	\$13.00	\$16.57	\$0.00	\$56.79
6	60	\$29.69	\$13.00	\$16.97	\$0.00	\$59.66
7	65	\$32.17	\$13.00	\$17.38	\$0.00	\$62.55
8	70	\$34.64	\$13.00	\$17.78	\$0.00	\$65.42
9	75	\$37.12	\$13.00	\$18.18	\$0.00	\$68.30
10	80	\$39.59	\$13.00	\$18.58	\$0.00	\$71.17

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.96	\$13.00	\$0.69	\$0.00	\$36.65
2	45	\$22.96	\$13.00	\$0.69	\$0.00	\$36.65
3	50	\$25.51	\$13.00	\$16.16	\$0.00	\$54.67
4	50	\$25.51	\$13.00	\$16.16	\$0.00	\$54.67
5	55	\$28.06	\$13.00	\$16.57	\$0.00	\$57.63
6	60	\$30.61	\$13.00	\$16.97	\$0.00	\$60.58
7	65	\$33.16	\$13.00	\$17.38	\$0.00	\$63.54
8	70	\$35.71	\$13.00	\$17.78	\$0.00	\$66.49
9	75	\$38.27	\$13.00	\$18.18	\$0.00	\$69.45
10	80	\$40.82	\$13.00	\$18.58	\$0.00	\$72.40

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2024	\$61.34	\$11.49	\$23.59	\$0.00	\$96.42
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/01/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.67	\$11.49	\$23.59	\$0.00	\$65.75
2	60	\$36.80	\$11.49	\$23.59	\$0.00	\$71.88
3	70	\$42.94	\$11.49	\$23.59	\$0.00	\$78.02
4	80	\$49.07	\$11.49	\$23.59	\$0.00	\$84.15
5	90	\$55.21	\$11.49	\$23.59	\$0.00	\$90.29

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.72	\$11.49	\$23.59	\$0.00	\$66.80
2	60	\$38.06	\$11.49	\$23.59	\$0.00	\$73.14
3	70	\$44.41	\$11.49	\$23.59	\$0.00	\$79.49
4	80	\$50.75	\$11.49	\$23.59	\$0.00	\$85.83
5	90	\$57.10	\$11.49	\$23.59	\$0.00	\$92.18

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER	12/01/2023	\$48.33	\$9.65	\$18.22	\$0.00	\$76.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$49.81	\$9.65	\$18.22	\$0.00	\$77.68
	12/01/2024	\$51.28	\$9.65	\$18.22	\$0.00	\$79.15
	06/01/2025	\$52.78	\$9.65	\$18.22	\$0.00	\$80.65
	12/01/2025	\$54.28	\$9.65	\$18.22	\$0.00	\$82.15
	06/01/2026	\$55.83	\$9.65	\$18.22	\$0.00	\$83.70
	12/01/2026	\$57.33	\$9.65	\$18.22	\$0.00	\$85.20

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER	12/01/2023	\$44.45	\$9.65	\$18.22	\$0.00	\$72.32
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.93	\$9.65	\$18.22	\$0.00	\$73.80
	12/01/2024	\$47.40	\$9.65	\$18.22	\$0.00	\$75.27
	06/01/2025	\$48.90	\$9.65	\$18.22	\$0.00	\$76.77
	12/01/2025	\$50.40	\$9.65	\$18.22	\$0.00	\$78.27
	06/01/2026	\$51.95	\$9.65	\$18.22	\$0.00	\$79.82
	12/01/2026	\$53.45	\$9.65	\$18.22	\$0.00	\$81.32

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.92	\$14.41	\$18.67	\$0.00	\$74.00
	06/01/2024	\$41.92	\$14.41	\$18.67	\$0.00	\$75.00
	08/01/2024	\$41.92	\$14.91	\$18.67	\$0.00	\$75.50
	12/01/2024	\$41.92	\$14.91	\$20.17	\$0.00	\$77.00
	06/01/2025	\$42.92	\$14.91	\$20.17	\$0.00	\$78.00
	08/01/2025	\$42.92	\$15.41	\$20.17	\$0.00	\$78.50
	12/01/2025	\$42.92	\$15.41	\$21.78	\$0.00	\$80.11
	06/01/2026	\$43.92	\$15.41	\$21.78	\$0.00	\$81.11
	08/01/2026	\$43.92	\$15.91	\$21.78	\$0.00	\$81.61
	12/01/2026	\$43.92	\$15.91	\$23.52	\$0.00	\$83.35
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2023	\$56.56	\$9.65	\$18.67	\$0.00	\$84.88
	06/01/2024	\$58.04	\$9.65	\$18.67	\$0.00	\$86.36
	12/01/2024	\$59.51	\$9.65	\$18.67	\$0.00	\$87.83
	06/01/2025	\$61.01	\$9.65	\$18.67	\$0.00	\$89.33
	12/01/2025	\$62.51	\$9.65	\$18.67	\$0.00	\$90.83
	06/01/2026	\$64.06	\$9.65	\$18.67	\$0.00	\$92.38
	12/01/2026	\$65.56	\$9.65	\$18.67	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2023	\$58.56	\$9.65	\$18.67	\$0.00	\$86.88
	06/01/2024	\$60.04	\$9.65	\$18.67	\$0.00	\$88.36
	12/01/2024	\$61.51	\$9.65	\$18.67	\$0.00	\$89.83
	06/01/2025	\$63.01	\$9.65	\$18.67	\$0.00	\$91.33
	12/01/2025	\$64.51	\$9.65	\$18.67	\$0.00	\$92.83
	06/01/2026	\$66.06	\$9.65	\$18.67	\$0.00	\$94.38
	12/01/2026	\$67.56	\$9.65	\$18.67	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$48.63	\$9.65	\$18.67	\$0.00	\$76.95
	06/01/2024	\$50.11	\$9.65	\$18.67	\$0.00	\$78.43
	12/01/2024	\$51.58	\$9.65	\$18.67	\$0.00	\$79.90
	06/01/2025	\$53.08	\$9.65	\$18.67	\$0.00	\$81.40
	12/01/2025	\$54.58	\$9.65	\$18.67	\$0.00	\$82.90
	06/01/2026	\$56.13	\$9.65	\$18.67	\$0.00	\$84.45
	12/01/2026	\$57.63	\$9.65	\$18.67	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$50.63	\$9.65	\$18.67	\$0.00	\$78.95
	06/01/2024	\$52.11	\$9.65	\$18.67	\$0.00	\$80.43
	12/01/2024	\$53.58	\$9.65	\$18.67	\$0.00	\$81.90
	06/01/2025	\$55.08	\$9.65	\$18.67	\$0.00	\$83.40
	12/01/2025	\$56.58	\$9.65	\$18.67	\$0.00	\$84.90
	06/01/2026	\$58.13	\$9.65	\$18.67	\$0.00	\$86.45
	12/01/2026	\$59.63	\$9.65	\$18.67	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2023	\$40.34	\$14.41	\$18.67	\$0.00	\$73.42
	06/01/2024	\$41.34	\$14.41	\$18.67	\$0.00	\$74.42
	08/01/2024	\$41.34	\$14.91	\$18.67	\$0.00	\$74.92
	12/01/2024	\$41.34	\$14.91	\$20.17	\$0.00	\$76.42
	06/01/2025	\$42.34	\$14.91	\$20.17	\$0.00	\$77.42
	08/01/2025	\$42.34	\$15.41	\$20.17	\$0.00	\$77.92
	12/01/2025	\$42.34	\$15.41	\$21.78	\$0.00	\$79.53
	06/01/2026	\$43.34	\$15.41	\$21.78	\$0.00	\$80.53
	08/01/2026	\$43.34	\$15.91	\$21.78	\$0.00	\$81.03
	12/01/2026	\$43.34	\$15.91	\$23.52	\$0.00	\$82.77
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	For apprentice rates see "Apprentice- LABORER"					
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2023	\$44.58	\$9.65	\$18.07	\$0.00	\$72.30
	06/01/2024	\$46.06	\$9.65	\$18.07	\$0.00	\$73.78
	12/01/2024	\$47.53	\$9.65	\$18.07	\$0.00	\$75.25
	06/01/2025	\$49.03	\$9.65	\$18.07	\$0.00	\$76.75
	12/01/2025	\$50.53	\$9.65	\$18.07	\$0.00	\$78.25
	06/01/2026	\$52.08	\$9.65	\$18.07	\$0.00	\$79.80
	12/01/2026	\$53.58	\$9.65	\$18.07	\$0.00	\$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/03/2024	\$67.74	\$14.32	\$19.11	\$0.00	\$101.17
	09/01/2024	\$69.54	\$14.32	\$19.11	\$0.00	\$102.97
	03/02/2025	\$71.34	\$14.32	\$19.11	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

- ** Multiple ratios are listed in the comment field.
- *** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
- **** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

SECTION 00 83 00

ATTACHMENT B

EXCERPTS FROM CHAPTERS 30, 82, AND 149 OF THE
MASSACHUSETTS GENERAL LAWS

ATTACHMENT B

Excerpts from Chapters 30, 82 and 149 of the Massachusetts General Laws

***NOTICE** - These are **NOT** the official versions of the Massachusetts General Laws (MGL). While reasonable efforts have been made to assure the accuracy of the excerpts provided, do not rely on this information without first checking an official edition of the MGL. If you are in need of legal advice or counsel, consult a lawyer. These excerpts include amendments to the General Laws passed before January 4, 2023. For laws enacted since that time, see the 2023 Session Laws.*

CERTAIN EXCERPTS FROM THE MASSACHUSETTS GENERAL LAWS ARE APPLICABLE TO CONSTRUCTION CONTRACTS. ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 149 AS AMENDED.

Section 25. LODGING, BOARD AND TRADE OF PUBLIC EMPLOYEES; STATUTE PART OF EMPLOYMENT CONTRACT.

"Every employee in public work shall lodge, board, and trade where and with whom he elects; and no person or his agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefor, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment."

Section 26. PUBLIC WORKS; PREFERENCE TO VETERANS AND CITIZENS; WAGES.

"In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town, authority or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are veterans as defined in clause Forty-third of section 7 of chapter 4 and who are qualified to perform the work to which the employment relates and, within such preference, preference shall be given to service-disabled veterans; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect..."

Section 34. PUBLIC CONTRACTS; STIPULATION AS TO HOURS AND DAYS OF WORK; VOID CONTRACTS.

"Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid..."

Section 34A. CONTRACTS FOR PUBLIC WORKS; WORKERS' COMPENSATION INSURANCE; BREACH OF CONTRACT; ENFORCEMENT AND VIOLATION OF STATUTE.

"Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall, before commencing performance of such contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the contract, and that the contractor shall continue such insurance in full force and effect during the term of the contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a contract until he has been furnished with sufficient proof of compliance with the aforesaid

stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing cancellation by registered mail, postage prepaid, with a return receipt of the addressee requested, shall be a sufficient notice..."

Section 34B. CONTRACTS FOR PUBLIC WORKS; WAGES FOR RESERVE POLICE OFFICER.

"Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers in such city or town."

Whenever general bids are invited for a contract subject to Section 44A, the following provision applies:

Section 44E. FILING OF BIDS; FORMS; MODULAR BUILDINGS. Second paragraph of subdivision (2), clause E.

"The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A."

For projects estimated to cost more than \$25,000, the following provision applies to sub-bidders:

Section 44F. PLANS AND SPECIFICATIONS; SUB-BIDS; FORM; CONTENTS. First paragraph of clause I of subdivision (2) of section 44F.

"The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F."

Section 44G. ALLOWANCES; ALTERNATES; WEATHER PROTECTION DEVICES.

"(A) "Allowance" as used herein means a sum of money covering one or more items of labor or labor and materials which is designated in bid documents and which general bidders are required to use in computing their bids. The use of such allowances shall be prohibited in the award of any contract subject to the provisions of section forty-four A. Whenever the designer is unable to supply specifications for any item prior to the solicitation of bids, such item shall not be included in any contract subject to the provisions of section forty-four A. The awarding authority shall solicit bids for every such item separately pursuant to the provisions of section forty-four A after specifications for that item are prepared.

(B) Every alternate contained in the form for general bids shall be listed in a numerical sequence in order of priority. When the awarding authority decides to consider alternates in determining the lowest eligible and responsible bidder, the awarding authority shall consider the alternates in descending numerical sequence, such that no single alternate shall be considered unless every alternate preceding it on the list has been added to or subtracted from the base bid price.

(C) The use of options other than alternates in bid documents or bid forms subject to section forty-four A shall be prohibited under all circumstances.

(D) Every contract subject to section forty-four A shall include specifications for the installation of weather protection and shall require that the contractor shall install the same and that he shall furnish adequate heat in the area so protected during the months of November through March. Standards for such specifications shall be established by the commissioner or his designee.”

Section 44J. INVITATIONS TO BID; NOTICE; CONTENTS; VIOLATIONS; PENALTY.

"(1) No public agency or authority of the commonwealth or any political subdivision thereof shall award any contract for which competitive bids are required pursuant to section forty-four A of this chapter or section thirty-nine M of chapter thirty, or for which competitive proposals are required pursuant to subsection (4) of section forty-four E of this chapter or section eleven C of chapter twenty-five A, unless a notice inviting bids or proposals therefor shall have been posted no less than one week prior to the time specified in such notice for the receipt of said bids or proposals in a conspicuous place in or near the offices of the awarding authority, and shall have remained posted until the time so specified, and unless such notice shall also have been published at least once not less than two weeks prior to the time so specified in the central register published by the secretary of state pursuant to section twenty A of chapter nine and in a newspaper of general circulation in the locality of the proposed project, and on the COMMBUYS system administered by the operational services division. Said notice shall also be published at such other times and in such other newspapers or trade periodicals as the commissioner of capital asset management and maintenance may require, having regard to the locality of the work involved.

(2) Said notice shall specify the time and place where plans and specifications of the proposed work may be had; the time and place of submission of general bids; and the time and place for opening of the general bids. For contracts subject to the provisions of section forty-four A to H, inclusive, of this chapter, said notice shall also specify the time and place for submission of filed sub-bids, where required pursuant to section forty-four F; and the time and place for opening of said filed sub-bids.

Said notice shall also provide sufficient facts concerning the nature and scope of such project, the type and elements of construction, and such other information as will assist applicants in deciding to bid on such contract.

(3) No contract or preliminary plans and specifications shall be split or divided for the purpose of evading the provisions of this section.

(4) General bids and filed sub-bids for any contract subject to this section shall be in writing and shall be opened in public at the time and place specified in the posted or published notice, and after being so opened shall be open to public inspection.

(5) The provisions of this section shall not apply to any transaction between the commonwealth and any public service corporation.

(6) The provisions of this section may be waived in cases of extreme emergency involving the health and safety of the people and their property, upon the written approval of said commissioner. The written approval shall contain a description of the circumstances and the reasons for the commissioner's determination.

(7) Whoever violates any provision of this section shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than three years or in a jail or house of correction for not more than two and one-half years, or by both said fine and imprisonment; and in the event of final conviction, said person shall be incapable of holding any office of honor, trust or profit under the commonwealth or under any county, district of municipal agency.

Each and every person who shall cause or conspire to cause any contract or preliminary plans and specifications to be split or divided for the purpose of evading the provisions of this section shall forfeit and pay to the commonwealth, a political subdivision thereof or other awarding authority subject to this section, the sum of not more than five thousand dollars and, in addition, such person or persons shall pay, apportioned among them, double the amount of damages

which the commonwealth or political subdivision thereof or other awarding authority may have sustained by reason of the doing of such act, together with the costs of the action.

(8) If an awarding authority rejects all general bids or does not receive any general bids, and advertises for a second opening of general bids with the original filed sub-bids as set forth in subsection (1) of section forty-four E the notice for receipt of such general bids may be published in the central register and elsewhere as required not less than one week prior to the time specified for such second opening of general bids.

(9) No request for proposals or invitation for bids issued under sections 38A ½ to 38O, inclusive, of chapter 7, section 11C of chapter 25A, section 39M of chapter 30, this section and sections 44A to 44H, inclusive, shall be advertised if the awarding authority's cost estimate is greater than 1 year old."

Attention is directed to the following sections of Chapter 30 of the General Laws of Massachusetts as amended to date.

Section 38A. PRICE ADJUSTMENT CLAUSE IN CONTRACTS FOR ROAD, BRIDGE, WATER AND SEWER PROJECTS AWARDED UNDER SEC. 39M

"Contracts for road and bridge projects awarded as a result of a proposal or invitation for bids under section 39M shall include a price adjustment clause for each of the following materials: fuel, both diesel and gasoline; asphalt; concrete; and steel. Contracts for water and sewer projects awarded as a result of a proposal or invitation for bids under said section 39M shall include a price adjustment clause for fuel, both diesel and gasoline; liquid asphalt; and portland cement contained in cast-in-place concrete. A base price for each material shall be set by the awarding authority or agency and shall be included in the bid documents at the time the project is advertised. The awarding authority or agency shall also identify in the bid documents the price index to be used for each material. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent."

Section 39F. CONSTRUCTION CONTRACTS; ASSIGNMENT AND SUBROGATION; SUBCONTRACTOR DEFINED; ENFORCEMENT OF CLAIM FOR DIRECT PAYMENT; DEPOSIT; REDUCTION OF DISPUTED AMOUNTS.

"(1) Every contract awarded pursuant to sections forty-four A to L inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the

subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general

contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g), and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction."

Section 39G. COMPLETION OF PUBLIC WORKS; SEMI-FINAL AND FINAL ESTIMATES; PAYMENTS; EXTRA WORK; DISPUTED ITEMS.

"Upon substantial completion of the work required by a contract with the commonwealth, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges and other highway structures, sewers and water mains, airports and other public works, the

contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such list a notice setting forth a reasonable time, which shall not in any event be prior to the contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one-day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.

Within sixty-five days after the effective date of a declaration of substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but one percent retainage, if held by the awarding authority, on that work, including the quantity, price and all but one percent retainage, if held by the awarding authority, for the undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payment filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section thirty-nine F, but no contract subject to said section thirty-nine F shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the contract by subcontractors, material suppliers or others.

If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by this section on or before the date herein above set forth, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, subsequent to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

Within thirty days after receipt by the awarding authority of a notice from the contractor stating that all of the work required by the contract has been completed, the awarding authority shall prepare and forthwith send to the contractor for acceptance a final estimate for the quantity and price of the work done and all retainage, if held by the awarding authority, on that work less all payments made to date, unless the awarding authority's inspection shows that work items required by the contract remain incomplete or unsatisfactory, or that documentation required by the contract has not been completed. If the awarding authority fails to prepare and send to the contractor the final estimate within thirty days after receipt of notice of completion, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such final estimate at the rate hereinabove provided from the thirtieth day after such completion until the date on which the awarding authority sends the final estimate to the contractor for acceptance or the date of payment therefor, whichever occurs first, provided that the awarding authority's inspection shows that no work items required by the contract remain incomplete or unsatisfactory. Interest shall not be paid hereunder on amounts for which interest is required to be paid in connection with the substantial completion estimate as hereinabove provided. The awarding authority shall include the amount of the interest required to be paid hereunder in the final estimate.

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment.

Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is so designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on its estimate of the fair value of its claims against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and a retention to secure satisfactory performance of the contractual work not exceeding five per cent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section thirty-nine F of chapter thirty; provided, that a five per cent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.

Substantial completion, for the purposes of this section, shall mean either that the work required by the contract has been completed except for work having a contract price of less than one percent of the then adjusted total contract price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract."

Section 39I. DEVIATIONS FROM PLANS AND SPECIFICATIONS.

"Every contractor having a contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or public works for the commonwealth, or of any political subdivision thereof, shall perform all the work required by such contract in conformity with the plans and specifications contained therein. No wilful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the engineer or architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such engineer or architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) if such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the contracting agency and the contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the contracting authority.

Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for.

Whoever violates any provision of this section wilfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both."

Section 39J. PUBLIC CONSTRUCTION CONTRACTS; EFFECT OF DECISIONS OF CONTRACTING BODY OR ADMINISTRATIVE BOARD.

"Notwithstanding any contrary provision of any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount of the contract is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district,

board, commission or other public body, a decision, by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily is unsupported by substantial evidence, or is based upon error of law.”

Section 39K. PUBLIC BUILDING CONSTRUCTION CONTRACTS; PAYMENTS.

"Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph: Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five-days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one percent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest

provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149."

Section 39L. PUBLIC CONSTRUCTION WORK BY FOREIGN CORPORATIONS; RESTRICTIONS AND REPORTS.

"The commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests proposals, bids or sub-bids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for the work with, and shall not approve as a subcontractor furnishing labor and materials for a part of the work, a foreign corporation which has not filed with such awarding authority a certificate of the state secretary stating that the corporation has complied with requirements of section 15.03 of subdivision A of Part 15 of chapter 156D and the date of compliance, and further has filed all annual reports required by section 16.22 of subdivision B of Part 16 of said chapter 156D, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the commonwealth."

Section 39M. CONTRACTS FOR CONSTRUCTION AND MATERIALS; MANNER OF AWARDING.

"(b) Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which

can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials."

For projects estimated to cost more than \$10,000, the following provision, section 39M subsection c, applies:

"(c) The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term "security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable."

Section 39N. CONSTRUCTION CONTRACTS; EQUITABLE ADJUSTMENT IN CONTRACT PRICE FOR DIFFERING SUBSURFACE OR LATENT PHYSICAL CONDITIONS.

"Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly."

Section 39O. CONTRACTS FOR CONSTRUCTION AND MATERIALS; SUSPENSION, DELAY OR INTERRUPTION DUE TO ORDER OF AWARDING AUTHORITY; ADJUSTMENT IN CONTRACT PRICE; WRITTEN CLAIM.

"Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the

awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.”

Section 39P. CONTRACTS FOR CONSTRUCTION AND MATERIALS; AWARDING AUTHORITY’S DECISIONS ON INTERPRETATION OF SPECIFICATIONS, ETC.; TIME LIMIT; NOTICE.

"Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made."

Section 39Q. CONTRACTS FOR CAPITAL FACILITY CONSTRUCTION; CONTENTS; ANNUAL CLAIMS REPORT.

“(1) Every contract awarded by any state agency as defined by section thirty-nine A of chapter seven for the construction, reconstruction, alteration, remodeling, repair or demolition of any capital facility as defined by the aforesaid section thirty-nine A shall contain the following subparagraphs (a) through (d) in their entirety:

(a) Disputes regarding changes in and interpretations of the terms or scope of the contract and denials of or failures to act upon claims for payment for extra work or materials shall be resolved according to the following procedures, which shall constitute the exclusive method for resolving such disputes. Written notice of the matter in dispute shall be submitted promptly by the claimant to the chief executive official of the state agency which awarded the contract or his designee. No person or business entity having a contract with a state agency shall delay, suspend, or curtail performance under that contract as a result of any dispute subject to this section. Any disputed order, decision or action by the agency or its authorized representative shall be fully performed or complied with pending resolution of the dispute.

(b) Within thirty days of submission of the dispute to the chief executive official of the state agency or his designee, he shall issue a written decision stating the reasons therefor, and shall notify the parties of their right of appeal under this section. If the official or his designee is unable to issue a decision within thirty days, he shall notify the parties to the dispute in writing of the reasons why a decision cannot be issued within thirty days and of the date by which the decision shall issue. Failure to issue a decision within the thirty-day period or within the additional time period specified in such written notice shall be deemed to constitute a denial of the claim and shall authorize resort to the appeal procedure described below. The decision of the chief executive official or his designee shall be final and conclusive unless an appeal is taken as provided below.

(c) Within twenty-one calendar days of the receipt of a written decision or of the failure to issue a decision as stated in the preceding subparagraph, any aggrieved party may file a notice of claim for an adjudicatory hearing with the division of hearing officers or the aggrieved party may file an action directly in a court of competent jurisdiction and shall serve copies thereof upon all other parties in the form and manner prescribed by the rules governing the conduct of adjudicatory proceedings of the division of hearing officers. In the event an aggrieved party exercises his option to file an action directly in court as provided in the previous sentence, the twenty-one day period shall not apply to such

filing and the period of filing such action shall be the same period otherwise applicable for filing a civil action in superior court. The appeal shall be referred to a hearing officer experienced in construction law and shall be prosecuted in accordance with the formal rules of procedure for the conduct of adjudicatory hearings of the division of hearing officers, except as provided below. The hearing officer shall issue a final decision as expeditiously as possible, but in no event more than one hundred and twenty calendar days after conclusion of the adjudicatory hearing, unless the decision is delayed by a request for extension of time for filing post-hearing briefs or other submissions assented to by all parties. Whenever, because an extension of time has been granted, the hearing officer is unable to issue a decision within one hundred and twenty days, he shall notify all parties of the reasons for the delay and the date when the decision will issue. Failure to issue a decision within the one hundred and twenty-day period or within the additional period specified in such written notice shall give the petitioner the right to pursue any legal remedies available to him without further delay.

(d) When the amount in dispute is less than ten thousand dollars, a contractor who is party to the dispute may elect to submit the appeal to a hearing officer experienced in construction law for expedited hearing in accordance with the informal rules of practice and procedure of the division of hearing officers. An expedited hearing under this subparagraph shall be available at the sole option of the contractor. The hearing officer shall issue a decision no later than sixty days following the conclusion of any hearing conducted pursuant to this subparagraph. The hearing officer's decision shall be final and conclusive, and shall not be set aside except in cases of fraud.

(2) The commissioner of administration shall require the division of hearings officers to prepare annually a report concerning the construction contract claims submitted to the division during the preceding twelve months, in such form as the commissioner shall prescribe. The report shall contain, at a minimum, the following information: the number of claims submitted; the names of all parties to each such claim; a brief description of the claim: the date of submission and of disposition of the claim; its disposition, whether by settlement, withdrawal, default or written decision; and the number of claims currently pending. The original of the report shall be submitted to the commissioner of administration by January fifteenth, and a copy shall be filed with the state librarian and shall be a public document."

Section 39R. KEEPING AND MAINTAINING OF BOOKS, RECORDS AND ACCOUNTS; STATEMENT OF MANAGEMENT ON INTERNAL ACCOUNTING CONTROL; FINANCIAL STATEMENTS; ENFORCEMENT.

"(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.

(3) "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof.

Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(5) "Audit," when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a *certified* opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

(6) "Accountant's Report," when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(7) "Management," when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) if the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary:

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

(1) whether the representations of management in response to this paragraph, and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner for capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b)."

Section 39S. CONTRACTS FOR CONSTRUCTION; REQUIREMENTS.

"(a) As used in this section the word "person" shall mean any natural person, joint venture, partnership corporation or other business or legal entity. Any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any public work by the commonwealth, or political subdivision thereof, or by any county, city, town, district, or housing authority, and estimated by the awarding authority to cost more than \$10,000, and any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, estimated to cost more than \$10,000, shall certify on the bid, or contract, under penalties of perjury, as follows:

(1) That he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

(b) Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

(c) The attorney general, or his designee, shall have the power to enforce this section including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts in all cases where, after investigation of the facts, he has made a finding that the award or performance has resulted in violation, directly or indirectly, of subsection (b), and he shall not be required to pay to the clerk of the court an entry fee in connection with the institution of the proceeding.”

Section 40. DISCHARGE OR RELEASE OF BONDS.

"Bonds given to the commonwealth, any county, city, town or political subdivision to secure the performance of contracts for the construction or repair of public buildings or other public works may be discharged or released by the awarding authority, upon such terms as it deems expedient, after the expiration of one year from the time of completion, subject to section thirty-nine K, of the work contracted to be done; provided that no claim filed under said bond is pending, and provided further, that no such bonds shall be discharged or released prior to the expiration of all special guarantees provided for in the contract unless new bonds in substitution therefor specifically relating to the unexpired guarantees shall be taken."

ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 82 (THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON) OF THE GENERAL LAWS OF MASSACHUSETTS AS AMENDED TO DATE.

Section 40. DEFINITIONS APPLICABLE TO SECTIONS 40A TO 40E.

"The following words, as used in this section and sections 40A to 40E, inclusive, shall have the following meanings:

"Company", natural gas pipeline company, petroleum or petroleum products pipeline company, public utility company, cable television company, municipal traffic signal department, and municipal utility company or department that supply gas, electricity, telephone, communication or cable television services or private water companies within the city or town where such excavation is to be made.

"Description of excavation location", such description shall include the name of the city or town, street, way, or route number where appropriate, the name of the streets at the nearest intersection to the excavation, the number of the buildings closest to the excavation or any other description, including landmarks, utility pole numbers or other information which will accurately define the location of the excavation.

"Emergency", a condition in which the safety of the public is in imminent danger, such as a threat to life or health or where immediate correction is required to maintain or restore essential public utility service.

"Excavation", an operation for the purpose of movement or removal of earth, rock or the materials in the ground including, but not limited to, digging, blasting, augering, backfilling, test boring, drilling, pile driving, grading, plowing in, hammering, pulling in, jacking in, trenching, tunneling and demolition of structures.

"Excavator", any entity including, but not limited to, a person, partnership, joint venture, trust, corporation, association, public utility, company or state or local government body which performs excavation operations.

"Marking standards", the methods by which a company designates its facilities in accordance with standards established by the Common Ground Alliance and the American Public Works Association.

"Non-mechanical means", excavation using any device or tool manipulated by human power, including air vacuum, air blowing or similar methods of excavation designed to minimize direct contact with utilities.

"Premark", to delineate the general scope of the excavation or boring on the paved surface of the ground using white paint, or stakes or other suitable white markings on nonpaved surfaces. No premarking shall be acceptable if such

marks can reasonably interfere with traffic or pedestrian control or are misleading to the general public. Premarking shall not be required of any continuous excavation that is over 500 feet in length.

"Professional land surveyor", a professional land surveyor as defined in section 81D of chapter 112.

"Safety zone", a zone designated on the surface by the use of standard color-coded markings which contains the width of the facilities plus not more than 18 inches on each side.

"Standard color-coded markings", red - electric power lines, cables, conduit or light cables; yellow - gas, oil, street petroleum, or other gaseous materials; orange - communications cables or conduit, alarm or signal lines; blue - water, irrigation and slurry lines; green - sewer and drain lines; white - premark of proposed excavation.

"System", the underground plant damage prevention system as defined in section 76D of chapter 164."

Section 40A. EXCAVATIONS; NOTICE.

"No excavator installing a new facility or an addition to an existing facility or the relay or repair of an existing facility shall, except in an emergency, make an excavation, in any public or private way, any company right-of-way or easement or any public or privately owned land or way, unless at least 72 hours, exclusive of Saturdays, Sundays and legal holidays but not more than 30 days before the proposed excavation is to be made, such excavator has premarked not more than 500 feet of the proposed excavation and given an initial notice to the system. Such initial notice shall set forth a description of the excavation location in the manner as herein defined. In addition, such initial notice shall indicate whether any such excavation will involve blasting and, if so, the date and the location at which such blasting is to occur.

Any professional land surveyor working on a preliminary design for a new facility or renovation where excavation is necessary shall: (i) Premark the proposed excavation; and (ii) provide initial notice to the system.

The notice requirements shall be waived in an emergency as defined herein; provided, however, that before such excavation begins or during a life-threatening emergency, notification shall be given to the system and the initial point of boring or excavation shall be premarked. The excavator shall ensure that the underground facilities of the utilities in the area of such excavation shall not be damaged or jeopardized.

In no event shall any excavation by blasting take place unless notice thereof, either in the initial notice or a subsequent notice accurately specifying the date and location of such blasting shall have been given and received at least 72 hours in advance, except in the case of an unanticipated obstruction requiring blasting when such notice shall be not less than four hours prior to such blasting. If any such notice cannot be given as aforesaid because of an emergency requiring blasting, it shall be given as soon as may be practicable but before any explosives are discharged."

Section 40B. DESIGNATION OF LOCATION OF UNDERGROUND FACILITIES.

"Within 72 hours, exclusive of Saturdays, Sundays and legal holidays, from the time the initial notice is received by the system or at such time as the company and the excavator or professional land surveyor agree, such company shall respond to the initial notice or subsequent notice by designating the location of the underground facilities within 15 feet in any direction of the premarking so that the existing facilities are to be found within a safety zone. Such safety zone shall be so designated by the use of standard color-coded markings. The providing of such designation by the company shall constitute prima facie evidence of an exercise of reasonable precaution by the company as required by this section; provided, however, that in the event that the excavator or professional land surveyor has given notice as aforesaid at a location at which because of the length of excavation the company cannot reasonably designate the entire location of its facilities within such 72 hour period, then such excavator or professional land surveyor shall identify for the company that portion of the excavation which is to be first made and the company shall designate the location of its facilities in such portion within 72 hours and shall designate the location of its facilities in the remaining portion of the location within a reasonable time thereafter. When an emergency notification has been given to the system, the company shall make every attempt to designate its facilities as promptly as possible. A company shall conduct periodic audits to ensure: (i) the accuracy of the designated location and marking of its facilities; and (ii) its adherence to marking standards."

Section 40C. EXCAVATOR'S RESPONSIBILITY TO MAINTAIN DESIGNATION MARKINGS; DAMAGE CAUSED BY EXCAVATOR.

"After a company has designated the location of its facilities at the location in accordance with section 40B, the excavator shall be responsible for maintaining the designation markings at such locations, unless such excavator requests remarking at the location due to the obliteration, destruction or other removal of such markings. The company shall then remark such location within 24 hours following receipt of such request.

When excavating in close proximity to the underground facilities of any company when such facilities are to be exposed, non-mechanical means shall be employed, as necessary, to avoid damage in locating such facility and any further excavation shall be performed employing reasonable precautions to avoid damage to any underground facilities including, but not limited to, any substantial weakening of structural or lateral support of such facilities, penetration or destruction of any pipe, main, wire or conduit or the protective coating thereof, or damage to any pipe, main, wire or conduit.

If any damage to such pipe, main, wire or conduit or its protective coating occurs, the company shall be notified immediately by the excavator responsible for causing such damage.

The making of an excavation without providing the notice required by section 40A with respect to any proposed excavation which results in any damage to a pipe, main, wire or conduit, or its protective coating, shall be prima facie evidence in any legal or administrative proceeding that such damage was caused by the negligence of such person."

Section 40D. LOCAL LAWS REQUIRING EXCAVATION PERMITS; PUBLIC WAYS.

"Nothing in this section shall affect or impair local ordinances or by-laws requiring a permit to be obtained before excavation in a public way or on private property; but notwithstanding any general or special law, ordinance or by-law to the contrary, to the extent that any permit issued under the provisions of the state building code or state fire code requires excavation by an excavator on a public way or on private property, the permit shall not be valid unless the excavator notifies the system as required pursuant to sections 40 and 40A, before the commencement of the excavation, and has complied with the permitting requirements of chapter 82A."

Section 40E. VIOLATIONS OF SECS. 40A TO 40E; PUNISHMENT.

"Any person or company found by the department of public utilities, after a hearing, to have violated any provision of sections 40A to 40E, inclusive, shall be fined \$1000 for the first offense and not less than \$5,000 nor more than \$10,000 for any subsequent offense within 12 consecutive months as set forth by the rules of said department; provided, however, that nothing herein shall be construed to require forfeiture of any penal sum by a state or local government body for violation of section 40A or 40C; and provided, further, that nothing herein shall be construed to require the forfeiture of any penal sum by a residential property owner for the failure to premark for an excavation on such person's residential property. The department of public utilities may require any person or company not in compliance with sections 40A to 40E, inclusive, to complete a "Dig Safe" training program in lieu of a fine for a first offense."

ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF CHAPTER 30 (AN ACT MOBILIZING ECONOMIC RECOVERY IN THE COMMONWEALTH) OF THE ACTS OF 2009.

Section 33.

"(a) Notwithstanding any general or special law to the contrary, the following requirements shall apply to any public works project funded by the American Recovery and Reinvestment Act of 2009 where the amount of construction costs under any contract awarded is likely to exceed \$1,000,000. For the purposes of this section, "public works" shall mean building or work the construction of which is carried on by authority of the commonwealth, or by a county, town, authority or district, or with funds of a federal agency or the commonwealth or a county, city, town, authority or district to serve the interest of the general public, regardless of whether title thereof is in the commonwealth or in a county, city, town, authority or district; provided, however, that for the purposes of this definition, "construction" shall have the meaning provided in section 27D of chapter 149 of the General Laws.

(b) For any public works project subject to subsection (a), the specifications set forth in any request for responses shall include a requirement that, on a per project basis, not less than 20 per cent of the total hours of employees receiving an hourly wage who are directly employed on the site of the project, employed by the contractor or a subcontractor and subject to the prevailing wage, shall be performed by apprentices in bona fide apprentice training programs as provided in sections 11H and 11I of chapter 23 of the General Laws which are approved by the division of apprentice training in the executive office of labor and workforce development.

(c) During the performance of a public works project subject to subsections (a) and (b), the contractor shall submit periodic reports to the awarding authority with records indicating the total hours worked by all journeymen and apprentices in positions subject to the apprentice requirement. In any instance in which the apprentice hours do not constitute 5 per cent of the total hours of employees subject to the apprentice requirement, the contractor shall submit a plan to the awarding authority describing how the contractor shall comply with the apprentice requirement.

(d) The attorney general shall have all the necessary powers to require compliance with the requirements of subsections (a), (b) and (c) therewith, including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts. Prior to award of the contract, an awarding authority may petition the attorney general for approval to adjust the requirements set forth in said subsections (a), (b) and (c). The attorney general may adjust these requirements only if he determines that compliance with these requirements is not feasible or if application of the requirements would be preempted by federal law.

(e) An awarding authority serving a low-income population may require additional specifications that address the needs of its clients including, but not limited to, preferential hiring for residents of public housing authorities for available apprenticeship positions.

(f) Subject to appropriation, the division of apprentice training shall enhance its outreach efforts to underserved populations in order to increase and diversify the number of apprentices in the commonwealth.”

Section 39.

“Any entity located in the commonwealth that receives federal funds through the American Recovery and Reinvestment Act of 2009 shall provide information as directed by the secretary of administration and finance regarding the use of the funds. The required information shall include, but not be limited to, the reporting information required by the federal government and any other information deemed necessary by the secretary to administer the American Recovery and Reinvestment Act of 2009 responsibly, efficiently and transparently. To the extent possible, the secretary shall work to streamline the reporting of this information, minimize duplication of data entry by recipients and ensure data consistency. The secretary may issue regulations to effectuate this reporting requirement.”

Section 40.

“Employers and hiring agents on all projects funded in whole or in part by the American Recovery and Reinvestment Act of 2009 shall post notices of available employment opportunities to the commonwealth’s job bank or the one-stop career centers closest to where the projects shall be located. The postings shall contain such information as directed by the secretary of labor and workforce development. The secretary may issue regulations to effectuate this job posting requirement.”

END OF SECTION

SECTION 00 83 00

ATTACHMENT C

NOT USED

SECTION 00 83 00

ATTACHMENT D

CHANGE ORDERS

ATTACHMENT D

CHANGE ORDERS

Policy:

This section supplements Article 11, Changes to the Contract, in the General Conditions and Supplementary Conditions.

All change order requests submitted to the Engineer for review and processing must include calculation sheets similar to the example provided herein (Appendix A) and all other supporting documentation necessary for evaluation. Failure to comply with these instructions will result in delays in processing the change order.

In order to avoid possible delays with approval of change orders, at the beginning of the project and as circumstances warrant, the Contractor shall submit a list of construction equipment, identifying major pieces of equipment to be utilized on the project. The list shall include the Contractor's designation, if any, the manufacturer, model, year of manufacture, serial number, size and horsepower of equipment. The Contractor shall also provide for approval a proposed bluebook equipment rental rate development that separately lists for each piece of equipment the monthly rental rate, area adjustment factor, depreciation factor, estimated operating cost per hour and total hourly rate. In the event the Contractor fails or is unable to provide appropriate rate information the Engineer may develop equipment rental rates for use on change orders.

Payment of Change Orders:

Payment of all change orders shall be in accordance with the relevant provisions of Massachusetts General Laws, Chapter 30, Section 39G for non-building construction and Section 39K for building construction as amended from time to time.

Payment of change orders shall be made in accordance with one of the following three methods:

- A. Existing unit prices as set forth in the contract; or
- B. Agreed upon lump sum or unit prices; or
- C. Time and materials

A. Payment for work for which there is a unit price in the contract:

Where the contract contains a unit price for work and the Engineer orders a change for work of the same kind as other work contained in the contract and is performed under similar physical conditions, the Contractor shall accept full and final payment at the contract unit price(s) for the acceptable quantities. Under certain circumstances, the unit

prices may be subject to revaluation and adjustment. See Article 13 in the Supplementary Conditions.

B. Payment for work or materials for which no price is contained in the contract:

If the Engineer directs, the Contractor shall submit promptly in writing to the Engineer an offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. The stated price, either lump sum or unit price, shall be divided so as to show that it is the sum of:

1. The estimated cost of Labor, plus
2. Direct Labor Cost, plus
3. Material and Freight Costs, plus
4. Equipment Costs, plus
5. An amount not to exceed 15% of the sum of items 1 through 4 for overhead and profit, plus (if applicable),
6. In the case of work done by a subcontractor an amount not to exceed 5%, for the general contractor of the sum of the cost (not including subcontractor's overhead and profit) of items 1 through 4 for his overhead and profit (less, if applicable),
7. Credits for work deleted from the contract, including actual costs of the deleted work plus the percentage of overhead, profit, bonds and insurance attributable to such credit amount.

C. Payment for work on a time and materials basis:

Unless an agreed lump sum and/or unit price is obtained as noted above and is so stated in the change price, the Contractor shall accept as full payment for which no agreement is contained in contract, an amount equal to:

1. The estimated cost of Labor, plus
2. The Direct Labor Costs, plus
3. Equipment Costs, plus
4. Material and Freight Costs, plus
5. An amount not to exceed 15% of the sum of items 1 through 4 for overhead and profit, plus, if applicable,
6. In the case of work done by a subcontractor an amount not to exceed 5%, for the general contractor of the sum of the cost (not including subcontractor's overhead and profit) of items 1 through 4 for his overhead and profit (less, if applicable),
7. Credit for work deleted from the Contract, including actual costs of the deleted work plus the percentage of overhead, profit, bonds and insurance attributable to such credit amount.

Explanation of items 1 through 7 as outlined in "B" and "C" above:

1. Labor - Only those workers employed on the project who are doing the extra work, including the foreman in charge, are allowable. General foremen, superintendents, or other supervisory personnel are considered to be included in the overhead markup as provided in items 5 and/or 6. Hourly labor rates in excess of those as listed in the contract wage rates require documentation. As a minimum, an explanation and the appropriate copy of the certified payroll are required.
2. Direct Labor Costs - These costs are limited to those which are required in the contract document. Coverage in excess of the contract provisions, secured by the contractor/subcontractor(s) at his option, are ineligible. The following list of typical direct labor charges is provided for your assistance and is in no way intended to be complete or all encompassing:

Workman's Compensation

Federal/State: Social Security Tax and Unemployment Tax;

Health, Welfare and Pension Benefits; (this cost is included in the wage rates appearing in the Attachment A Massachusetts Wage Rates.

Liability insurance:	Bodily injury; excess umbrella; property damage; public liability
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Blasters insurance:	If applied to any required direct labor costs
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Builders risk insurance:	If applied to any required direct labor costs
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Experience modification insurance:	If applied to any required direct labor costs
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Surcharges:	If applied to any required direct labor costs
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Following award and prior to execution of a construction contract, the Contractor and filed subbidders (where applicable) shall submit for review by the Owner, documentation to establish the markup percentage(s).

The documented direct labor markup for this contract may be adjusted on an annual basis as measured from the date the contract is executed. The contract agreement will provide for the establishment of the Direct Labor Cost percentage.

3. Material and Freight - Only those materials required as a result of the change order and reasonable freight charges for delivery of same are allowable.
4. Equipment - Only the equipment required as a result of the change order is allowable. Equipment rental rates shall be governed by the current EquipmentWatch, division of

Intertec Publishing [Formerly Nielson/Dataquest] Rental Rate Bluebook for Construction Equipment (the "Bluebook"). In determining the rental rate, the following shall apply:

- a. For equipment already on the project - the monthly prorated rental rate by the hourly use shall be applicable;
- b. For equipment not on the project the daily rate, the weekly rate, or monthly rate will prevail, whichever will prove to be most cost effective. Small tools and manual equipment are examples of costs not allowable under this item. These costs are considered to be included in the overhead markup as provided in items 5 and/or 6.

(1 Month (Normal Use) = 176 hours)

- 5.& 6. Overhead and Profit - All other costs not previously mentioned are considered to be included in this item, be it for the general contractor or subcontractor(s).
7. Credits - Work deleted, material and equipment removed from the contract, stored and/or returned shall be credited to the cost of the change order, less documented costs.

This change order will be prepared in such manner as to clearly separate Eligible and Ineligible Costs (as applicable to state-funded projects).

The Contractor shall furnish itemized statements of the cost of the work ordered and shall give the Engineer access to all accounts, bills and vouchers relating thereto; and unless the Contractor shall furnish such itemized statements, and access to all accounts, bills and vouchers, he shall not be entitled to payment for any items of extra work for which such information is sought by the Engineer.

Appendix A
Example Calculation Sheet

1. Labor

Foreman	10 hours @	\$10.00/hour	\$100.00
Engineer	10 hours @	8.80/hour	85.00
Operator	10 hours @	9.50/hour	95.00
Laborers	24 hours @	7.00/hour	<u>168.00</u>
			\$448.00

2. Direct Labor Cost (use the agreed upon Direct Labor Cost)

*(30)% of \$448.

*(used for example purposes only) \$ 134.00

3. Materials & Freight

150 l.f. of 12" pipe @ \$2.00/l.f.	\$ 300.00
15 v.f. precast SMH	1,700.00
Freight (slip# ___ enclosed)	<u>25.00</u>
	\$2,025.00

4. Equipment

1 Backhoe	10 hours @	\$ 80.00/hour	\$ 800.00
1 Truck-crane	10 hours @	100.00/hour	<u>1000.00</u>
			\$1800.00

TOTAL (items 1 through 4): \$4,407.00

5. (20%) markup for Overhead, Profit

(20%) of \$4,407 \$ 881.00

6. (7½ %) markup on subcontractor's cost for general contractor (if subcontractor is involved)

(7½ %) of \$4,407 \$ 331.00

7. Credits (deductibles) -\$323.00

TOTAL COST: \$5,296.00

Reminder: Provide support documentation as necessary i.e. vouchers, correspondence, calculation, photographs, reports.

END OF SECTION

SECTION 00 84 00

ARTICLE 16, TITLE 1, OF
TOWN OF ARLINGTON BY-LAWS

00 84 00
BY-LAWS OF THE TOWN OF ARLINGTON
TITLE I
ARTICLE 16

CONSTRUCTION PROJECTS

Section 1. Women Work Force Participation

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Contractor shall maintain as a goal on this project a not less than five percent ratio of women work force to total project hours in both the general contract and each individual filed sub-bid contract, if applicable. The preceding sentence shall be included in all construction contracts whether entered into by the Town pursuant to the provisions of M.G.L. c. 149 or M.G. L. c 30, §39M et. seq. provided however, that if entered into under Chapter 30 same shall not be deemed to apply where the projected bid price as determined by the Director of Public Works is not likely to exceed \$200,000.
- B. A Labor Scheduling Table which will be used as a tool for achieving a range of women work force participation for the entire project in both the general contract and each individual filed sub-bid contract.

Section 2. Equal Opportunity Goal Compliance

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Before starting work, the contractors (includes the general contractor, for itself and its subcontractors, as well as all filed sub-bid contractors, if applicable) will submit plans for achievement of the equal opportunity goals of the contract. All contractors will be required to make a good faith effort to achieve these goals. The plan will indicate if the contractors expect to achieve the requirements during the first quarter. If there are reasons why the contractors do not expect to achieve the requirements during the first quarter year of the contract construction phase, then the contractors shall provide a plan calculated to address, to the extent reasonably possibly, these obstacles to a good faith effort to achieve such goals.
- B. Not more than ten days following the end of each work quarter, the contractors will report on the achievement of the goals, detailing the good faith efforts that have been made and will continue to be made and any other appropriate efforts not yet undertaken.
- C. All reports will be signed by an officer or principal of the company who has the authority to contractually obligate the company.

Section 3. Recruitment and Training

Any board, officer, committee, or other agency of the Town, which acts on behalf of the Town in making or supervising any contract, in an amount exceeding the sum of \$100,000 for the purchase of goods or services or for the construction, renovation, or repair of buildings or other improvement of real estate, may make arrangements with contractors and other interested agencies for special programs of recruitment and training in connection with the work to be performed on such contract, with the objective of promoting equal employment opportunity for members of minority groups protected by the fair employment laws of the Commonwealth and the United States. Any board, officer, committee or other Town agency may expend Town funds in carrying them out provided that appropriations specifically designed for such purposes have been voted by the Town Meeting.

SECTION 01 11 00: SUMMARY OF WORK

PART 1 – GENERAL

1.01 LOCATION

- A. Brackett Elementary School is located at 66 Eastern Ave, Arlington, MA 02476.

1.02 GENERAL REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and applicable parts of Division 01 General Requirements are all included as part of this Section. The Contractor is required to examine all other sections of the specifications for requirements that may affect the work of this Section. The Contractor is also required to coordinate the Work with that of all trades affecting or affected by the Work of this Section, and to cooperate with such trades to assure the continued progress of the Work.
- B. The intent of the Contract Documents is to require that the Contractor provide all material, labor and equipment needed in order to furnish a complete Project, and that all of the material, labor and equipment be furnished complete in every respect.

1.03 SCOPE OF WORK

- A. Work covered by this contract includes but may not be limited to: site-work; construction; re-construction; alterations; remodeling or repair of the public works Project described in this paragraph 1.03 including the following major work:
 - 1. Replacing play equipment
 - 2. Replacing safety surfacing
 - 3. Replacing site furnishings
 - 4. Asphalt and concrete paving
 - 5. Color rubber surfacing
 - 6. Painted graphics
 - 7. Basketball goal installation
 - 8. Alternates: Bid Alternates
 - 9. Substantial Completion date is November 8, 2024.
 - 10. Final Completion date is November 20, 2024.

- B. Refer to

1.04 DOCUMENTATION

- A. Contractor shall cooperate with the Owner and Landscape Architect to record any and all changes to existing conditions or proposed work that deviate from the Contract Documents. The Contractor shall furnish all recorded changes to the Landscape Architect to be used for As-Built documents.

1.05 NOISE CONTROL

- A. The Contractor shall adhere to the Town ordinances for Noise Control (Title V, Article 12, Section 3) throughout the construction period. Noise control will be strictly enforced by the Town.
- B. No construction shall occur between 7 PM and 7 AM Monday through Friday.
- C. No heavy machine shall be used between 6 PM to 8 AM Monday through Friday, 5 PM to 9 AM on Saturday, Sunday, or legal holidays.
- D. Any exemption to prohibited construction hours must be authorized by a Town representative.
- C. Contractor shall not permit engine idling on the job site. This shall be enforced through random, unannounced periodic inspections.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 22 00: UNIT PRICES

PART 1 – GENERAL

- 1.01 The Unit Prices set forth herein shall be used to determine any equitable adjustment of the Contract Price in connection with the changes or extra work performed under this Contract as directed by the Town.
- 1.02 It is mutually understood and agreed that such Unit Prices include all items of costs, equipment, taxes and insurance of every kind, overhead, and profit for the Contractor and they shall be used uniformly, without modification for addition and deductions. Prices listed under ADDITIONS and DEDUCTIONS are to be the complete total price billed to and paid by the Owner therefor. There can be no more than fifteen (15) percent difference in price between the additions and deductions.
- 1.03 Sufficient prior notice shall be given in accordance with the General Conditions so that proper measurements of materials removed or to be replaced may be taken. All quantities used in the determination of additions to or deductions from the Contract Price due to Unit Prices shall only be those that have been determined and approved by the Owner in advance.
- A. The unit price bid shall be taken to include all labor and materials necessary to make the item of work complete in place, whether listed or not. All supervision, overhead items, including but not limited to bond, insurance, and labor burden – and profit shall be included. Payment shall fully compensate the Contractor for any other work which is not specified or shown, but which is necessary to complete the work of the item.
- 1.04 UNIT PRICES FORM

ITEM DESCRIPTION (All references to items shall correspond to work as described in the relevant portions of the Construction Documents.)		UNIT	COST	APPROVED
1	Construction fencing	LF	\$	
8	Ordinary borrow/clean fill, complete in place	CY	\$	
3	Gravel borrow, complete in place	CY	\$	
4	Base drainage stone for poured in place rubber, in place	CY	\$	
5	Dense graded gravel, complete in place	CY	\$	
6	3/4" Crushed stone/drainage stone, complete in place	CY	\$	
7	Clean screened loam, complete in place	CY	\$	
8	Asphalt walk paving, per detail and specification	SF	\$	
9	Vehicular asphalt paving			
10	4" reinforced concrete paving, complete in place including base and subbase preparation & broom finish	SF	\$	
11	Poured-in-place rubber surfacing installed per detail and specification	SF	\$	
12	Lawn seed & loam, per detail and specification	SF	\$	
13	6' high black vinyl coated chain link fence per detail and specification	LF	\$	
14	10' high black vinyl coated chain link fence per detail and specification	LF	\$	

UNIT PRICES
SECTION 01 22 00

1.05 GENERAL

- A. Sufficient prior notice shall be given in accordance with the General Conditions so that proper measurements of materials removed or to be replaced may be taken. All quantities used in the determination of additions to or deductions from the Contract Price due to Unit Prices shall only be those that have been determined and approved by the Town in advance.
- B. The unit price bid shall be taken to include all labor and materials necessary to make the item of work complete in place.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 23 00: ALTERNATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including the conditions and general requirements of the Contract, Division 00 and applicable parts of Division 01, apply to the work under this Section.
- B. The Contractor shall carefully examine all the Contract Documents for requirements that affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.2 SUMMARY

- A. The Schedule of Alternates included in this Section lists all the Alternates that appear in the Contract Documents, and the specification Sections which are affected by each Alternate.
- B. For each of the Alternates scheduled at the end of this Section, bidders shall state the amount in the proposal to be added to or deducted from the Contract Sum for the work.
- C. Consult the individual Specification Sections and the Drawings for detailed requirements of each Alternate.

1.3 GENERAL INSTRUCTIONS

- A. Each Bidder shall be held fully responsible for examining the scope of the Alternates generally defined herein and for recognizing any modifications to his work caused by any Alternate.
- B. The Bid Alternate Price shall be complete cost, including overhead, profit, bonds, insurance, transportation, and all other costs connected with, or incidental to, the work described.
- C. Alternates listed below in the Schedule of Alternates are listed in order. The Contract will be awarded on the basis of the Base Bid only, or the Base Bid plus any number of Alternates strictly added in order.
- D. All dimensional and quantity estimates provided in the descriptions of the work below (noted with “approx.”) are provided for initial reference only; exact dimensions and quantities for the full extent of the work as described in the Drawings and Specifications shall be confirmed in field by the Contractor before submitting the price. The Contractor shall be responsible for the full extent of the work described, not to be limited by the approximate quantities.

1.4 ALTERNATES

- A. Definition: "Alternates" are alternate products, materials, equipment, systems, methods, units of work, or major elements of the construction, which may, at the Authority's option and under the terms established by the Contract or Agreement, be selected for the work in lieu of the corresponding requirements of the Contract Documents or in addition to the work of the Base Bid as noted.
- B. Alternate Requirements: A Schedule of Alternates is included at the end of this Section. Each Alternate is defined using abbreviated language, recognizing that the Contract Documents define the requirements. Coordinate related work to ensure that work affected by each Alternate is complete and properly interfaced with work of each selected Alternate.
- C. Provide written proposals for each Alternate on the Bid Form for the Authority's consideration. Each proposal amount shall include the entire cost of the Alternate portion of the work, including overhead, profit, and other costs including cost of interfacing and coordinating the Alternate with related and adjacent work.

1.5 SCHEDULE OF ALTERNATES

- A. **Alternate No. 1** – ADD to the Base Bid the skim coat PIP rubber surfacing on porous asphalt indicated as ADD ALTERNATE #1 on the LAYOUT AND MATERIALS PLAN including related details and associated specifications.
- B. **Alternate No. 2** – ADD to the Base Bid furnishing and installing the spinner and associated Engineered Wood Fiber surfacing and rubber edge. This equipment and material change is indicated as ADD ALTERNATE #2 on the LAYOUT AND MATERIALS PLAN including related details and associated specifications.

PART 2 – GENERAL
NOT USED

PART 3 – EXECUTION
NOT USED

END OF SECTION

**SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. The Conditions of the Contract and other Sections of Division I, General Requirements apply to this Section.

1.02 PROJECT MANAGEMENT

- A. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- B. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:00 a.m. and 5:00 p.m. on Monday through Saturday. No work is to be done on holidays or Sundays.
- C. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.

1.03 PROJECT MEETINGS

- A. Pre-construction conference: Within 5 days following a Notice to Proceed, the Contractor shall schedule a pre-construction conference to be held at the project location. This conference will be attended by the project superintendent as a minimum. The contractor shall bring to this conference the following documents more fully described elsewhere in this specification:
 - 1. Project Progress Schedule
 - 2. Schedule of Values
 - 3. Submittal Register
 - 4. Notification of Product Substitution
 - 5. Initial submittals covering first 30 days of construction
 - 6. Site phone number and after hours point of contact and phone number.
- B. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Landscape Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Related requests for interpretations (RFIs).
 - c. Related Change Orders.
 - d. Deliveries.
 - e. Submittals.
 - f. Review of mockups.
 - g. Possible conflicts.

- h. Compatibility problems.
 - i. Time schedules.
 - j. Weather limitations.
 - k. Manufacturer's written recommendations.
 - l. Warranty requirements.
 - m. Compatibility of materials.
 - n. Acceptability of substrates.
 - o. Temporary facilities and controls.
 - p. Space and access limitations.
 - q. Regulations of authorities having jurisdiction.
 - r. Testing and inspecting requirements.
 - s. Installation procedures.
 - t. Coordination with other work.
 - u. Required performance results.
 - v. Protection of adjacent work.
 - w. Protection of construction and personnel.
 - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- C. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
 - 1. Attendees: In addition to representatives of Owner, and Landscape Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.

- 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Requests for interpretations (RFIs).
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
3. Minutes: Landscape Architect will record and distribute the meeting minutes.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Contractor's Construction Schedule shall be updated at each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.04 COORDINATION

- A. Project Schedule. The Contractor shall submit at the pre-construction conference for approval to the Owner a detailed operational schedule showing the sequence of operations prior to commencement of any work at the site. This project schedule will be in the form of a CPM, PERT or Gant chart which clearly reflects project tasks to be completed in a logical sequence. Any changes to this operational plan must be approved by the Owner. The Contractor shall keep this schedule updated to reflect actual progress, and will revise the schedule if required to do so based on substantial departures from the planned progress of the work.
- B. Project Superintendent. The Contractor must retain a competent full time representative, satisfactory to the Owner. This representative shall not be changed, except with the consent of the Owner. The representative shall be in full charge of the work.

END OF SECTION

SECTION 01 31 46: PERMITS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 01 and applicable parts of Division 31, EXCAVATION FILLING AND GRADING, apply to the work under this Section.
- B. The Contractor shall perform the work in accordance with the Contract Documents, and any applicable municipal requirements.

1.2 SCOPE OF WORK

- A. The Contractor shall be responsible for obtaining all permits required to complete the work of this contract, to provide all coordination and furnish all bonds, assurances and required warranties. As applicable, the Contractor shall be responsible for any/all fees associated with the securing of permits necessary for the execution of the work of this contract. Should any street work be required, a contractor specifically approved by the Town shall perform it.

1.03 PERMITS BY CONTRACTOR

- A. The Contractor shall prepare permit applications and obtain applicable permits after the contract is awarded, bearing all expenses. All required permits shall be obtained, INCLUDING BUT NOT LIMITED TO the following:
 - 1. Parking Permits as needed and appropriate

1.4 GENERAL

- A. Guarantee all work per permit requirements.

1.5 DIG SAFE

- A. Contact DIG SAFE seventy-two (72) hours prior to initiating work at #811.

PART 2 – MATERIALS

2.1 GENERAL

- A. All materials and equipment shall conform to permit requirements and the Town's standards for utilities, excavation, backfill, patching, and surveying or other work unless otherwise stated in these specifications. Coordinate as necessary with the appropriate Town official and/or private utility.

PART 3 – EXECUTION

3.1 GENERAL

- A. Execute all work per permit requirements. All plumbing and electric work to be approved by Town Inspectors; sidewalk ramps to be approved by Town Engineer.

END OF SECTION

PERMITS
SECTION 01 31 46

SECTION 01 33 00: SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required shop drawings, manufacturer's cuts, specifications, and certifications of all materials and equipment for the Landscape Architect's approval. Actual product samples may also be required as stipulated in the technical specification sections.
- B. All submittals shall be submitted within four (4) weeks after the award of the contract and may be made and distributed digitally with the approval of the Owner via email or File Transfer Protocol (FTP) site. Alternatively, submittals may be made in hard copy form; three (3) copies (Contractor, Landscape Architect, and Other City Department) shall be in three (3) submittal packages so that manuals can be prepared for office and field reference.

1.3 GENERAL SUBMITTAL PROCEDURES

- A. The Landscape Architect has 10 days to review the submittals and return them to the Contractor, also in PDF format.
- B. Transmittal: Include a transmittal with each submittal identifying the item clearly. All transmittals shall coordinate with these Specifications.

PART 2 – PRODUCTS

2.1 REQUIREMENTS

- A. References are made throughout the Specifications and Drawings where submittals are required. All finishes, colors, and patterns are to be reviewed and approved by submittal or field sample.
- B. Where the Contractor's intention is to furnish the materials or equipment as specified, a list of all such elements, by Specification section, shall accompany the submittals so that the entire submittal is complete for the project.

PART 3 – EXECUTION

3.1 SUBMISSIONS

- A. Submit all documents and data either in a collated, manual format, with three (3) manuals to be submitted; OR distributed digitally with the approval of the Owner. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all furnishings and installation.
- B. Submit all required product or material samples concurrent with the materials/equipment information manuals described above. Each submittal shall reference its appropriate specification section, part, and paragraph.

END OF SECTION

SECTION 01 35 00: SPECIAL PROJECT PROCEDURES

PART 1 – GENERAL

1.1 SAFETY REGULATIONS

- A. This Project is subject to compliance with Public Law 91-596 the "Occupational Safety and Health Act of 1970" (OSHA), as amended, with respect to all rules and regulations pertaining to construction, as amended, and as published by the U.S. Department of Labor.
- B. The committing of nuisances on the Site or adjacent property is prohibited.

1.2 SAFETY PRECAUTIONS

- A. The Contractor shall take all precautions to safeguard the health and well-being of all workers and all others rightfully on the Project site who may be affected by work done under this Contract. The Contractor is solely responsible for safety on the Site of the Project, both during construction hours and non-construction hours.
- B. All safety laws and regulations of the U.S. Department of Labor, the Commonwealth of Massachusetts, and the Town of Arlington applicable to work performed under this Contract shall be adhered to by the Contractor.

1.3 LEGAL RELATIONS/RESPONSIBILITY TO PUBLIC

- A. Laws to be Observed:
 - 1. The Contractor shall keep himself fully informed of all existing and future State and National Laws and Municipal ordinances and regulations in any manner affecting those engaged or employed in the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same and of all provisions required by Law to be made a part of this Contract, all of which provisions are hereby incorporated by reference and made a part hereof. The Contractor shall cause all Subcontractors, Suppliers, agents, and employees to observe and comply with, all such existing and future Laws, ordinances, regulations, and orders.
 - 2. If the Contractor uses or stores toxic or hazardous substances s/he is subject to certain additional laws and regulations including but not limited to M.G.L. Chapter 111F, Section 2, (the "Right to Know" law) and regulations promulgated by the State Department of Public Health, the Department of Public Safety and those of Town of Boston agencies.

1.4 FIRE PROTECTION & PREVENTION

- A. The Contractor shall keep the Project Site free of rubbish and debris at all times.
 - 1. The Contractor shall provide metal barrels located at appropriate areas into which all refuse and garbage shall be deposited. All barrels shall have tight fitting covers.
 - 2. At the end of each work week, the Contractor shall thoroughly clean the Project Site of all rubbish and debris of any nature and remove such from the premises.
 - 3. In addition, to the requirements in this Section, the Contractor shall, until Final Completion of the Work, provide and maintain fire extinguishers ready for use distributed around the Project Site and in and about temporary structures, if any.
 - 4. Gasoline and other flammable liquids shall be stored in and dispensed from UL listed safety containers in conformance with the National Board of Fire Underwriters recommendations and the Commonwealth of Massachusetts Department of Public Safety requirements, and in no event within the confines of the permanent structures.
 - 5. All tarpaulins used shall have UL approval and comply with Federal Specifications CCC-C746. Polyethylene shall not be used.

1.5 RUBBISH REMOVAL

- A. The Contractor shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of the Work; but this shall in no way be construed to relieve the Contractor of his/her primary responsibility for maintaining the Project Site clean and free of debris, leaving all work in a clean condition satisfactory to the Official.
- B. Immediately after unpacking, the Contractor shall collect and remove from the Project Site all packing materials, case lumber, excelsior, wrapping, and other rubbish.

1.6 SITE DRAINAGE & PUMPING

- A. The Contractor shall be responsible at all times for proper and sufficient site drainage and shall maintain such drainage during the life of the Contract in a manner acceptable to the Designer and so as not to adversely affect the adjacent areas.
- B. The Contractor shall provide and maintain all pumps, suction and discharge lines, and power in sufficient number and capacity to keep all excavations, pits, trenches, foundations, and the entire property area free from accumulation of water from any source whatsoever at all times and under all circumstances and contingencies that may arise.
- C. For additional requirements of excavation and dewatering, refer to the Division 02 Section, SITE CLEARING AND PREP and Division 31 Section EXCAVATION FILLING AND GRADING.

1.7 SNOW & ICE REMOVAL

- A. The Contractor shall promptly remove all snow and ice which may impede the Work, damage the finishes or materials, be detrimental to any crafts or trades, or impede trucking, delivery or moving of materials at the Site, or prevent adequate drainage of the Site or adjoining areas.

1.8 WINTER CONSTRUCTION

- A. The Contractor shall provide protection against damage to materials and work installed in freezing weather, including special heat and coverings to prevent damage by the elements. The ground surface, under footings, under pipelines, under masonry, under concrete, and other work subject or damage shall be protected against freezing or ice formations.

1.9 TURF AREAS & SITE MAINTENANCE

- A. From Notice of Proceed through Final Completion, the Contractor shall be responsible for the following tasks:
 - 1. Removal of all graffiti within 36 hours
 - 2. Timely care and maintenance of existing turf areas including mowing. Turf areas will not be allowed to grow taller than 4 inches.
 - 3. Fall clean-up including leaf and branch removal
 - 4. Spring clean-up including leaf and branch removal

1.10 BROKEN GLASS

- A. The Contractor shall be held responsible at all times prior to Substantial Completion of the Work, or occupancy by the Town, whichever occurs first, for all broken or scratched glass, or glass which had been damaged as a result of the Work, or otherwise and, when so directed by the Official, the Contractor shall replace at no increase in Contract Price or Contract Time, all such glass broken, missing, or damaged prior to Substantial Completion.

1.11 CLEANING

- A. The Contractor shall at all times keep the site free from accumulation of waste materials or rubbish.

- B. Immediately prior to final inspection, the entire Project Site shall be thoroughly cleaned by the Contractor including, without limitation:
 - 1. All construction facilities, tools, equipment, surplus materials, debris, and rubbish shall be removed from the Project site and the entire Work shall be left broom clean.
 - 2. All finished surfaces shall be left in perfect condition, free of stains, spots, marks, dirt, and other defects. The Contractor shall be responsible for the cleaning and polishing of the Work of all trades, whether or not cleaning by such trades is included in their respective Sections of the Specifications.
 - 3. All metals, hardware, fixtures, and equipment shall be left in undamaged, bright, polished condition. In cleaning items that have a manufacturer's finish, or items previously finished by a Subcontractor, care shall be taken so as not to damage such finish.
- C. In cleaning finish surfaces, care shall be taken not to use cleaning agents that may stain any finish materials. Any damage to finishes caused by operations shall be corrected and repaired by the Contractor at no increase in Contract Price.

1.11 OPERATIONS IN OCCUPIED STRUCTURES

- A. The Contractor shall segregate all the Work from the public and/or the user group work force. The Contractor shall submit the method of segregation to the Town for approval before the start of any work.
- B. The Contractor shall ensure that its agents and employees, including agents and employees of all Subcontractors, do not have any direct and unmonitored contact with children at any time on the Site.
- C. In the event that the Contractor believes a portion of the Work cannot be completed without the possibility of direct and unmonitored contact with a child, the Contractor shall notify the Town and obtain prior written consent before proceeding with that portion of the Work. Workers who may have direct and unmonitored contact with children will be subject to verification of their Criminal Offender Record Information (CORI).

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

**SECTION 01 55 00
ACCESS**

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Provide and maintain vehicular access to site and within site:
 - 1. To temporary construction facilities, storage, and work areas.
 - 2. For use by persons and equipment involved in construction of Project.
 - 3. For use by emergency vehicles.
 - 4. Access to the work area will be through the school site. Coordination with summer program schedules is required.
- B. Remove temporary access facilities when no longer needed, and restore areas.

1.02 RELATED REQUIREMENTS

- A. Section 01 31 00, PROJECT MANAGEMENT.
- B. Section 01 57 00, TEMPORARY CONTROLS.
- C. Section 01 74 00, CLEANING UP.

1.03 EXISTING PAVEMENTS

- A. Designated existing on-site driveways may be used for construction traffic.
 - 1. Provide temporary additional roads as needed for required construction access.
 - 2. Maintain existing construction, and restore to original, or specified, condition at completion of Work.
- B. Designated areas of existing parking facilities may be used for parking of construction personnel's private vehicles and of Contractor's lightweight vehicles.
 - 1. Do not allow heavy vehicles or construction equipment in parking areas.
- C. The Contractor must coordinate with The Town of Arlington for any work which may affect the traffic on Town streets.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 CARE AND PROTECTION OF PROPERTY:

The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect

damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, to the satisfaction of the Owner.

3.02 REMOVAL

- A. Completely remove temporary materials and construction when construction needs can be met by use of permanent installation.
 - 1. Remove and dispose of compacted materials to depths required by conditions to be met in completed Work.
- B. Restore areas to original or to specified conditions at completion of Work.

END OF SECTION

SECTION 01 56 00: TEMPORARY BARRIERS & ENCLOSURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 GENERAL REQUIREMENTS

- A. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, Part b, Criteria 1.

1.03 WORK INCLUDED

- A. Provide all labor, equipment, implements, and materials required to furnish, install, construct, and perform all site improvements complete as shown on the Contract Drawings and specified herein; to include, but not be limited to the following:
 - 1. Temporary Construction Perimeter Fencing
 - 2. Tree or Plant Protection Fencing as indicated on the Contract Drawings
 - 3. All other temporary barriers and controls needed for protection of the public during construction.

1.04 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Division 01 Section: TEMPORARY CONTROLS
 - 2. Division 31 Section: SITE CLEARING AND PREP
 - 3. Division 31 Section: EXCAVATION FILLING AND GRADING
 - 4. Division 32 Section: PLANTING
 - 5. Division 32 Section: LOAM AND PLANTING PREPARATION
 - 6. Division 32 Section: TURF & GRASSES

1.05 SUBMITTALS

- A. Shop Drawings and Samples
 - 1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

1.06 PRODUCT DELIVERY, STORAGE & HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.

- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.
- D. The Contractor shall be solely responsible for all materials stored on the site once delivered. Any materials left unsecured at the job site shall be solely at the contractor's own risk.

1.07 DEFINITIONS

- A. The following items are included herein and shall mean:

- 1. NCLMA – National Chain Link Manufacturers' Association
- 2. OSHA – Occupational Safety and Health Act.

201 BARRIERS & BARRICADES

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.
 - 1. Comply with standards and code requirements for erection of structurally adequate barriers.
 - 2. Install barriers of a neat and uniform appearance.
 - 3. Provide graphics and signs warning of the hazard being protected against.
 - 4. Where appropriate and needed provide lighting, including flashing red or amber lights.
 - 5. Provide barriers at public rights-of-way and for public access to existing buildings when adjacent to construction operations.
- B. Provide barricades with blinking beacon light at all open trenches and other excavations.
- C. Provide protection as specified in Division 32 Section, PLANTING for plant life designated to remain.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

202 TEMPORARY CONSTRUCTION FENCING

- A. Prior to any excavation work the Contractor shall provide temporary construction fencing as shown on the Drawings and/or as required to completely protect the work area and injury to persons or property.
- B. The Contractor shall furnish and install temporary fencing of the following type in all areas where existing fencing lengths are inadequate to enclose the construction.
 - 1. Chain link fencing, six feet high min., fabricated from No. 9 gauge galvanized wire woven in a 2- inch diamond mesh with top salvage and having galvanized steel H or pipe intermediate and terminal posts. Post spacing shall not exceed eight feet (8') on center. Cross bracing, reinforcing gates and other parts of fencing shall conform to standard Specifications of the National Chain Link Manufacturers Association. All posts shall be set into temporary concrete footings or on temporary chain link fencing stands as approved by the Landscape Architect.
- C. The contractor shall furnish and install matching gates equipped with suitable locks, other hardware, and, where necessary, provide access for construction apparatus or fire-fighting equipment. The Owner shall be provided with a copy of the key used for all locks.

203 TEMPORARY WORK IN PUBLICWAYS

- A. Prior to commencing any work in public ways and other areas which are legally used by vehicles or pedestrians, the Contractor shall submit in writing the proposed methods of protection to the Official. Work shall not be commenced in these areas until written approval is received from the Official.
- B. In general, all excavations in public ways shall be protected by substantial barriers which will offer complete protection against accidents for pedestrian and vehicular traffic without interrupting the normal flow of traffic. All barriers must be properly lighted with electric or battery powered safety lights and must be maintained in good working order by the Contractor for the duration of the time such barriers are required.
- C. Trenches across sidewalks shall be completely covered with a temporary walkway, comprised of properly supported nominal 2-inch-thick lumber laid with butt joints and covered with exterior grade plywood, one-half of an inch minimum thickness. Provide continuous 2-inch by 4-inch (nominal) rails and posts secured to the temporary walkway conforming to the requirements of the Occupational Safety and Health Act (OSHA).
- D. Wherever temporary chutes are to be extended over sidewalks or other pedestrian or vehicular traffic areas, the bottom and sides of the chutes shall be provided with continuous dustproof and weatherproof lining, applied to the exterior surfaces.
- E. The Contractor will be required to furnish, install, and maintain in good condition, at no increase in Contract Price or Contract Time, all other safety measures which in the judgment of the Official are required to protect the public from accidents due to work performed under this Contract. This requirement is supplementary to the Contractor's rights and obligations to provide and employ safety measures as s/he may deem necessary or as may be required by law or standard safety practices.

204 TREE PROTECTION FENCING

- A. See Division 31 Section, SITE CLEARING AND PREP for tree protection fencing requirements.
 - 1. Stake or spray layout of all proposed work under the driplines of existing trees for approval before beginning construction. Install fencing over the greatest extent feasible within the driplines of the trees, allowing for the work.
 - 2. Maintain fencing in sound condition until project completion. Do not relocate installed fencing without the express approval of the Landscape Architect or Owner.

PART 3 – EXECUTION

3.01 BARRIERS, BARRICADES & ENCLOSURES

- A. Install temporary items as specified herein and in the Drawings or, where not specified, to level of quality suitable for the intended purpose as judged by the Landscape Architect.

3.02 REMOVAL OF TEMPORARY BARRIERS, ENCLOSURES & PROTECTIONS

- A. Remove temporary barriers, barricades, fencing, enclosures, and protections as warranted by the progress of the Work and prior to Substantial Completion.
- B. Remove in-ground elements of all temporary barrier installations (if any) completely.

TEMPORARY BARRIERS & ENCLOSURES

SECTION 01 56 00

Grade site as noted.

- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition at start of work or as specified elsewhere in the Contract Documents.

END OF SECTION

**SECTION 01 57 00
TEMPORARY CONTROLS**

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to cross-country areas, river and stream crossings, and construction in and adjacent to wetlands, unless otherwise specifically stated.
- C. Prior to commencement of work, the Contractor shall meet with the Owner, Landscape Architect and representative from the Town to develop mutual understandings relative to compliance of the environmental protection program.

1.01 REQUIREMENTS INCLUDED

- A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and related areas under Contractor's control; remove physical evidence of temporary facilities at completion of work.

1.02 RELATED REQUIREMENTS

- A. Section 01 57 00 - ACCESS
- B. Section 01 74 00 - CLEANING UP

1.03 NOISE CONTROL

- A. Noise levels shall not exceed those stipulated by Occupational Safety and Health Administration.

1.04 DUST CONTROL

- A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.05 SURFACE WATER AND GROUNDWATER CONTROL

- A. Provide methods to control surface water to prevent damage to project, site, and adjoining properties.
- B. Dispose of drainage water in a manner to prevent flooding, erosion, sedimentation, or other damage to any portion of the site or to adjoining areas and properties.

1.06 DEBRIS CONTROL

- A. Maintain all areas under Contractor's control free of extraneous debris.

- B. Initiate and maintain a specific program to prevent accumulation of debris at construction site.
 - 1. Provide containers for deposit and removal of debris.

1.07 POLLUTION CONTROL

- A. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations.
- B. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- C. Provide systems for control of atmospheric pollutants.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 NOTIFICATION AND STOPPAGE OF WORK:

- A. The Landscape Architect will notify the Contractor in writing of any observed non-compliance with the Contract Documents. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Landscape Architect until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.
- B. The notification process described under paragraph A above does not relieve the Contractor of the contractual obligation for continuous compliance with the Contract Documents.

3.02 AREA OF CONSTRUCTION ACTIVITY:

- A. Insofar as possible, the Contractor shall confine their construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

3.03 PROTECTION OF WATER RESOURCES:

- A. The Contractor shall not pollute water bodies with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.

- B. Special measures should be taken to insure against spillage of any pollutants into public waters.

3.04 PROTECTING AND MINIMIZING EXPOSED AREAS:

- A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided.
- B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to ensure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Landscape Architect.

3.05 LOCATION OF STORAGE AREAS:

- A. The location of the Contractor's storage areas for equipment and/or materials shall be located on cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Landscape Architect. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Landscape Architect.
- B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control shall be employed to protect any downstream areas from siltation.
- C. There shall be no storage of equipment or materials within one hundred feet of delineated wetlands as indicated on the Drawings.
- D. Storage areas in cross-country locations shall be restored to pre-construction conditions with the planting of native species of trees and shrubs.

3.06 PROTECTION OF LANDSCAPE:

- A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Landscape Architect. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.
- B. Branches, limbs, and roots shall not be cut except by permission of the Landscape Architect. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.
- C. Where, in the opinion of the Landscape Architect, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting or other operations, the Landscape Architect may require the Contractor to adequately protect such trees by placing boards, planks, poles or fencing around them. Any trees or landscape

feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Landscape Architect will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of.

3.07 CLEARING AND GRUBBING:

- A. The Contractor shall clear and grub only on the Owner's land or the Owner's easements, and only the area required for construction operations, as approved by the Landscape Architect.

3.08 DISCHARGE OF DEWATERING OPERATIONS:

- A. Any water that is pumped and discharged from the excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands. When constructing in a wetlands area, the Contractor shall discharge water from dewatering operations directly to the nearest drainage system, stream, or waterway after filtering by an approved method.
- C. The pumped water shall be filtered through filter fabric and baled straw, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

3.10 DUST CONTROL:

- A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust.
- B. Calcium Chloride shall not be used for dust control within wetland resource areas, buffer zones, drainage basins, or in the vicinity of any source of potable water.

3.11 SEPARATION AND REPLACEMENT OF TOPSOIL:

- A. Topsoil shall be carefully removed from areas where excavations are to be made, and separately stored to be used again as directed. The topsoil shall be stored in an area acceptable to the Landscape Architect and adequate measures shall be employed to prevent erosion and drying out of excavated topsoil material.

END OF SECTION

SECTION 01 57 13: TEMPORARY EROSION & SEDIMENT CONTROL

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

- A. Provide all work and take all measures to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any stream or wetlands.
 - 1. Compost filter sock
 - 2. Drain inlet protection

1.03 REFERENCE

- A. The Contractor is responsible for ensuring that all work conducted at the Site, including but not limited to sediment and erosion control, complies with the City Regulations. In addition, all work shall be conducted in accordance with "Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity", published by the United States Environmental Protection Agency.

1.04 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with Division 01 Section, SUBMITTAL PROCEDURES:
 - 1. Two weeks prior to the start of the work, submit to Landscape Architect, for review, a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction.

1.05 QUALITY ASSURANCE

- A. Use acceptable procedures, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.
- B. Operations restricted to areas of work indicated on drawings and area which must be entered for construction of temporary or permanent facilities.
- C. If construction materials are washed away during construction, remove materials from fouled areas.
- D. Stabilize diversion outlets by means acceptable to Landscape Architect.
- E. Landscape Architect has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices

or methods as necessary to control erosion.

PART 2 – PRODUCTS

2.01 FILTER TUBE

- A. Filter tube shall consist of biodegradable mesh tube filled with wood chips or compost. Filter tube shall be 12-inch diameter. Tubes shall be manufactured by Filtrex, Silt Sock, or an approved equal.

- 1. Stakes shall be hardwood.

2.02 INLET PROTECTION

- A. Inlet protection for catch basin protection shall be Silt Sack or an approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste into or alongside any body of water or into natural or man-made channels.

3.02 GENERAL INSTALLATION PROCEDURES

- A. In the event that sedimentation or siltation prevention measures used by the Contractor provide to be inadequate the Contractor shall be required to adjust their operations to the extent necessary to prevent such sedimentation or siltation from occurring. Any damage or degradation caused by inadequate controls must be restored by the Contractor at no additional cost to the Owner.
- B. All sedimentation and erosion control measures shall be in accordance with all permits, regulatory requirements, plans and specifications.
- C. Straw wattle and inlet protection shall be installed prior to the start of construction activities. Locate sedimentation barriers, surrounding stored material, approximately 6 feet from material.
- D. The Contractor shall keep all drains clear of mud, silt, debris, or other objectionable materials resulting from construction operations.
- E. The Contractor shall minimize the amount of bare earth exposed at any one-time during construction and minimize the length of time bare earth is exposed.
- F. Baled hay and filter materials shall be placed to form temporary water stops, dams, diversions, dikes, berms, and for other uses connected with water pollution control. As directed by the Landscape Architect bales may be disposed by the Contractor as best suits field conditions and requirements.
- G. Additional erosion control in the form of hay bales, filter tube, silt fence, etc. shall be employed by the Contractor as required to prevent erosion of topsoil or other materials.
- H. Install sedimentation barriers in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Landscape Architect.
- I. Construct earth berms or diversions to intercept and divert runoff water from critical areas.

- J. Protect catch basins from sedimentation by installing straw wattle around the basin or siltation fabric under grating casting.
- K. Discharge silt-laden water from excavations onto filter fabric mat and/or straw wattle or sediment traps to ensure that only sediment-free water is returned to waterways.
- L. Do not place excavated soil material adjacent to waterway in manner that will cause it to wash away by high water or runoff.
- M. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.
- N. Do not dump spoiled material into any salt marsh, streams, wetlands, surface waters, or unspecified locations.
- O. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands, or surface waters.
- P. Do not pump silt-laden water from trenches or excavations into salt marsh, surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- Q. Prevent damage to vegetation adjacent to or outside of construction area limits.
- R. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash-water from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- S. Do not alter flow line of any stream unless indicated or specified.
- T. Erosion control shall be reviewed regularly to keep in good condition especially following any rain events.
- U. Clean and dispose of debris from sedimentation barriers on a weekly basis.
- V. Upon completion of work and upon approval of Landscape Architect, remove and dispose of sedimentation barriers.

3.03 FILTER TUBE INSTALLATION

- A. Compost filter tube may be place on bare soil, grass, erosion control blankets, or paved surface.
- B. Install perpendicular to storm water flow, across slope, swale, ditch, or channel.
- C. Anchor to the ground using a 2-inch by 2-inch (nominal) 36-inch long hardwood post every 10 feet on center. Under concentrated flow conditions stake posts every 5 ft. on center.
- D. Stakes shall be driven through the center of the Filter Tube and installed a minimum of 12 inches into the existing soil.
- E. Edges of the Filter Tube shall be turned upslope to prevent flow around the ends of the Filter Tube.
- F. For 2:1 slopes additional Tubes may be placed every 20-50 feet along the slope to further reduce erosion.
- G. 12-inch Filter Tubes may be used for stormwater ditch checks and small channels (additional staking required, every 4 feet on center).

- H. Installed height of the Filter Tube in the field shall be 12-inch diameter equals effective height of 9.5 inches.
- I. Routinely inspect Compost Filter Tube after installation and runoff events to ensure adequate hydraulic flow-through, proper function and performance. Sediment should be removed once it reaches half the height of the Filter Tube.
- J. Contractor shall removal Filter Tube only upon Substantial Completion or approval by Landscape Architect. Unless otherwise directed by Landscape Architect or Owner, compost tubes can be emptied, compost spread on site, and tube disposed of offsite.

3.4 INLET PROTECTION

- A. Follow manufacturer's directions for installation.

END OF SECTION

SECTION 01 58 00: PROJECT SIGNS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The Contractor shall furnish and install exterior signs in accordance with the design shown on the Drawings and/or included in the Specifications including:
 - 1. Six (6) small (two feet by four feet) "Pardon our Appearance" temporary construction signs to be posted.
 - 2. Two signs shall be posted at each project location, on construction fencing where access is restricted.
- B. The signs shall be maintained in good condition by the Contractor for the duration of the Project and removed only with written approval of the Official.
- C. No signs, notices, or advertisements shall be displayed without written approval of the Official.

1.3 SUBMITTALS

- A. Submit samples of color and a Shop Drawings indicating lettering layouts to Landscape Architect for approval.
 - 1. Electronic file with sign layout to be provided to the Contractor.
 - 2. One graphic shall be produced for all signs. Smaller signs to be reduced in scale.

PART 2 – MATERIALS

2.1 "PARDON OUR APPEARANCE" SIGNS

- A. "Pardon Our Appearance" signs shall be 2 feet by 4 feet and shall be mounted on marine grade plywood panel or approved equal, securely mounted to wood posts, as directed by the Landscape Architect. Sign shall be professionally printed.
- B. Sign shall be securely mounted with galvanized metal attachments and shall be framed so as to be durable. All attachments and mountings shall be child-safe and vandal resistant.

PART 3 – EXECUTION

3.1 PLACEMENT

- A. Signs shall be installed facing the street or access point to the construction area so as to be visible and inform the general public. Where possible, the sign should be located so as not to conflict with the construction activity nor to require moving during the construction process.
- B. The construction sign shall be maintained in satisfactory condition during construction and then removed and disposed of legally by the Contractor just prior to the final acceptance of work.

END OF SECTION

SECTION 01 62 00 SUBSTITUTIONS

PART 1 – GENERAL

1.01 GENERAL

- A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed after award of the Contract are considered requests for substitutions. The following are not requests for substitutions:
1. Substitutions requested during the bidding period and accepted by Addendum prior to award of the Contract.
 2. Revisions to the Contract Documents requested by the Owner.
 3. Specified options included in the Contract Documents.
 4. Contractor's compliance with regulations issued by governing authorities.
- B. Substitution Request Submittal: The Landscape Architect will consider request for substitution received within 10 days after execution of the Contract, provided that the proposed substitution does not compromise the Contractor's ability to achieve the Substantial and Final Completion dates required in the Contract Documents. The Contractor shall include a minimum of 30 days for the substitution approval process into the project schedule, as well as the potential for the substitution to be rejected with the requirement to provide specified products.
1. Submit three copies of each request for substitution. Submit requests according to procedures required for change-order proposals.
 2. Identify the product or method to be replaced in each request. Include related Specification Section and Drawing numbers.
 3. Provide documentation showing compliance with the requirements for substitutions and the following information.
 - a. Coordination information, including a list of changes needed to other Work that will be necessary to accommodate the substitution.
 - b. A comparison of the substitution with the Work specified, including performance, weight, size, durability, and visual effect.
 - c. Product data, including Drawings and descriptions of products and installation procedures.
 - d. Samples, where applicable or requested.

- e. A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the substitution on Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification that the substitution conforms to the Contract Documents and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.
4. Landscape Architect's Action: If necessary, the Landscape Architect will request additional information within one week of receipt of a request for substitution. The Landscape Architect will notify the Contractor of acceptance or rejection within two weeks of receipt of the request. Acceptance will be in the form of a change order.
- a. Use the product specified if the Landscape Architect cannot make a decision within the time allocated.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Conditions: The Landscape Architect will receive and consider a request for substitution when one or more of the following conditions are satisfied. Otherwise, the Landscape Architect will return the requests without action except to record noncompliance with these requirements.
- 1. Extensive revisions to the Contract Documents are not required.
 - 2. Changes are in keeping with the intent of the Contract Documents.
 - 3. The specified product cannot be provided within the Contract Time. The Landscape Architect will not consider the request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
 - 4. The request is related to an "or-equal" clause.
 - 5. The substitution offers the Owner a substantial advantage, in cost, time, or other considerations, after deduction compensation to the Landscape Architect for redesign and increased cost of other construction.
 - 6. The specified product cannot receive approval by a governing authority, and the substitution can be approved.

- B. The Contractor's submittal and the Landscape Architect's acceptance of Shop Drawings, Product Data, or Samples for construction not complying with the Contract Documents do not constitute an acceptable request for substitution, nor do they constitute approval.

PART 3 – EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 71 23: CONSTRUCTION LAYOUT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work under this section shall consist of field staking the horizontal and vertical alignment of all essential features and proposed work, including walls, curbs, walkways, fencing, electrical and utility structures, plantings, furnishings, play equipment, and other related features as shown on the plans, by a Massachusetts-registered Professional Engineer or Land Surveyor. The Contractor shall familiarize himself with the existing conditions and shall be responsible for locating or re-establishing survey field ties, property lines, and benchmarks indicated on the plans.

PART 2 – MATERIALS

21 LAYOUT & STAKING

- A. The Contractor shall be responsible for furnishing all stakes, pins, and grade markings as required to implement the work of layout and staking and shall make all field adjustments ordered by the Landscape Architect at no extra cost to the Owner.
- B. Upon request by the Landscape Architect, the Contractor shall make available to the Owner survey instruments and operator necessary to check the proposed vertical and horizontal alignments at no extra cost.

PART 3 – EXECUTION

3.1 SURVEY LAYOUT

- A. The Contractor shall use the alignments shown on the plans to establish the layout of all proposed features and shall perform field adjustments as ordered by the Landscape Architect.
- B. All layout shall be by the dimensions noted on the Contract Drawings. Do not scale directly from the plans. If clarification regarding a dimension or intended layout procedure is required, contact the Landscape Architect.
- C. All dimensions marked on the Drawings with “+/-” or “(Confirm)” or “Verify in Field” are intended for confirmation of conformance to the expected conditions and (where applicable) that acceptable slopes and clearances are provided. Once layout has been established using other dimensions, the Contractor shall verify these dimensions (to within a tolerance of 1/2-inch) and report any discrepancy to the Landscape Architect for acceptance or instruction regarding adjustment. These confirmation dimensions should not be used to layout elements.
- D. The Surveyor shall lay out the essential or necessary grades and locations of site furnishings, footings, pavements, utilities, structures, and other proposed elements. The surveyor shall verify the location of any existing spikes, stakes, pipes, drill holes, etc. and shall be responsible for their accuracy. Proposed features shall be located in relation to dimensions shown on the drawings and as adjusted by the

- Landscape Architect.
- E. The Contractor shall inform the Landscape Architect when the general layout is completed and shall not begin excavation until the Landscape Architect approves the various alignments. Any discrepancies encountered in field conditions shall be reported to the Landscape Architect immediately and shall be adjusted as directed.
- F. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Landscape Architect's approval of basic layout and stakeout.

END OF SECTION

**SECTION 01 74 00
CLEANING UP**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Consult the individual Sections of the specifications for cleaning of Work installed under those Sections.

1.02 CLEANING DURING CONSTRUCTION

- A. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on the site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Maintain the Site free from accumulations of waste, debris, and rubbish.
- D. Provide on-site containers for collection of waste materials and rubbish.
- E. At the end of each day, remove and legally dispose waste materials and rubbish from site.
- F. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- G. Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.

1.03 FINAL CLEANING

- A. Prior to submitting a request to the Landscape Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.

- D. Employ experienced workmen or professional cleaners for final cleaning.
- E. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G. All broken or defective materials caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from finished surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- J. Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- K. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 77 00: CLOSEOUT DOCUMENTATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required maintenance manuals, maintenance and repair products, warranty information, detailed procedures, product information, submittal records, as-built drawings, and certifications of all materials and equipment for the Landscape Architect's approval. Additional submissions may also be required as stipulated in the technical specification sections.
- B. Upon Final Completion of all park construction, the contractor shall submit: three complete copies of a park maintenance manual, and three copies of an as-built drawing set, with three digital (DVD) copies of the as-built drawings.
- C. The Town will not issue the final check for park retainage until the submittal and approval of the maintenance manual and as-built drawings.

PART 2 – SUBMITTALS

2.1 MAINTENANCE MANUAL

- A. The Maintenance shall be in the form of a three-ring binder, organized, and tabbed into appropriate sections.

2.2 PARK MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the Town's Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.

2.3 AS-BUILT DRAWINGS

- A. As-Built drawing shall be a complete and accurate record that incorporate any and all changes to the construction plan set issued at the time of contract initiation. As-built

drawings shall be clearly marked and annotated and shall include but not be limited to: all field changes, change orders, and supplemental drawings provided by the Landscape Architect.

- B. As-Built Drawings shall include complete records of all water, drainage, and electric utilities installed, including sizing, location, and inverts of all drainage pipes and structures, and sizing and location of all water service lines and electrical conduits.
- C. The DVD shall include an electronic copy of all as-built drawings in AutoCAD version 2018 or earlier. Files shall be in both DWG and PDF formats.

PART 3 – EXECUTION

3.1 SUBMISSIONS

- A. Submit all documents and data in a collated, manual format, with three (3) manuals to be submitted. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all requirements listed above.

END OF SECTION

**SECTION 11 68 00
PLAYGROUND EQUIPMENT**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.02 WORK INCLUDES

- A. The work of this section includes installation of the Playground equipment noted specifically as being purchased by the City of Arlington directly from the product vendors. The City's purchase includes delivery to the project site. Contractor is responsible for unloading equipment from delivery vehicles and for furnishing equipment for installation of any preassembled components. Playground equipment not specifically noted as Purchased by Owner, shall be furnished and installed by the Contractor and noted as salvaged from on site as indicated in the Contract Documents.
- B. To be included, but not limited to the following (Installation only) for play equipment listed below
- C. Play Equipment by Landscape Structures, Inc. (LSI)
 - 1. Kindergarten playground by Landscape Structures, Inc.
 - 1) Log Crawl Tunnel – Model #173594. TOTAL OF 1
 - 2) Log Bench – Model #173595. TOTAL OF 2
 - 3) Cozy Dome – Model #168099. TOTAL OF 1
 - 2. Main playground by Playworld
 - 1) 5-12 Main Play Structure
 - 2) Arch Swing Set with Belt and Basket Group Seats
 - 3. Reinstall Gaga Pit
 - 4. Add Alternate #2 – Supernova Spinner by Kompan (To be purchased and installed by the contractor).
- D. The reps for the play manufacturers are listed below for installation related questions
 - 1. Kompan – Perry Trachten (pertra@kompan.com)
 - 2. LSI – John McConkey (john.mcconkey@obrienandsons.com)
 - 3. Playworld – Joe McMahon (jmcmahon@utilplayus.com)

1.03 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.

B. The following related items are included under the Sections listed below:

1. Section 01 23 00 – Alternates
2. Section 12 93 00 – Site Furnishings and Improvements
3. Section 31 10 00 – Site Clearing and Prep
4. Section 31 10 00 – Excavation Filling and Grading
5. Section 32 12 16 – Asphalt Paving
6. Section 32 13 13 – Concrete
7. Section 32 16 00 – Curbing
8. Section 32 18 00 – Playground Protective Surfacing
9. Section 32 18 00 – Recreational Court Surfacing
10. Section 32 31 00 – Chain Link Fence

1.04 SUBMITTALS

- A. Material and Workmanship Warranty shall be furnished by the manufacturer after installation by manufacturer-certified installer.
- B. Product Liability Insurance Certificate(s): The manufacturer(s) of the new playground components shall have in effect at the time of the completed installation and maintain an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars).
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.
- D. Supply documentation stating the system installer is an approved installer by the respective manufacturers.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Contractor is responsible for coordinating the delivery of Owner-purchased equipment with the City and Manufacturer, including off-loading, storing and securing all of the equipment on-site safely within temporary construction fencing prior to the installation.
- B. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- C. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- D. Handle in accordance with manufacturer's instructions.

1.06 DEFINITIONS

- A. The following items are included herein and shall mean:
 1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
 - 1) F1487 ...Playground Equipment for Public Use
 - 2) A36...Steel
 - 3) A153...Zinc Coating (hot-dip) on hardware

- 4) A307...Carbon Steel bolts 66000 psi tensile
3. CPSC - Consumer Product Safety Commission.
4. ADA - Americans with Disabilities Act and its current regulations.
5. MAAB: Massachusetts Architectural Access Board Rules and Regulations
6. AWS: American Welding Society
7. SSPS: Steel Structures Painting Council

1.07 QUALITY ASSURANCE

- A. Playground installation contractor shall be certified by the manufacturer of the respective equipment and shall coordinate on-site inspections during installation with manufacturer representatives as required for the manufacturers' certification and warranty of the materials and workmanship of the completed installation.
- B. The playground installation contractor shall provide written certification by a Certified Playground Safety Inspector (CPSI) that the installed equipment conforms to all applicable safety and accessibility standards including, but not limited to ASTM, CPSC, ADA, and MAAB. The Owner reserves the right to retain an independent CPSI to inspect the playground equipment and surfacing after reinstallation. The Contractor will be responsible for correcting any deficiencies at their own expense to the satisfaction of the Landscape Architect.

PART 2 - PRODUCT

2.01 OWNER PURCHASED PLAYGROUND EQUIPMENT

- A. Please refer to the drawings for the details provided by the manufacturers (Kindergarten by Landscape Structures and Main Playground by Playworld Systems in APPENDIX A)

2.02 ALTERNATE #2 - SPINNER "**SUPERNOVA**" BY KOMPAN

- A. The basis of model for the spinner is "Supernova" Model GXY960 by Kompan
- B. Material specifications as follows:
 - 1) The 7 ring segments are made of low density PE with excellent impact strength and usable within a large temperature span. Each segment has integrated handholds on both sides and non-skid top surface for safe usage.
 - 2) The Supernova is designed with a lifetime lubricated maintenance free roller system of vertical and horizontal rollers. The roller system is fully closed and sealed by two rubber lists.
 - 3) Legs with hot-dip galvanized surfacing resistant to corrosion.
- C. Dimensions: 6'-10" L x 6'-10" W x 2'-4" H
- D. Weight: 570 lbs
- E. Color: Color to be specified by Landscape Architect during the submittal process.

2.03 EXECUTION

- A. Contractor is responsible for coordinating the delivery of Owner-purchased equipment with the City and Manufacturer, storage and securing all of the equipment on-site safely within temporary construction fencing prior to the installation.
- B. Equipment shall be assembled to conform to the manufacturer's drawings. All fastenings shall be made as shown on the manufacturer's installation instructions and shall be securely

tightened. All work shall be done so that no hazardous projections remain on the finished work.

1. Cleanup: Upon completion of the work under this Section, all excess materials and debris resulting from work under this Section shall be cleaned up, removed from the Site, and properly disposed.

C. Manufacturer's Guarantees and Insurance

1. Product Liability Insurance: The manufacturer of the playground equipment shall maintain, and have in effect at the time of the completed installation, an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars). A certificate of insurance shall be available to the project owner on request.
2. Guarantees: The manufacturer shall furnish a written guarantee, covering the replacement of any damaged Structures or components, at no extra charge for the period of 15 (Fifteen) years. This guarantee does not cover Structures damaged by improper use or vandalism. Labor is not covered in this guarantee.

D. Warranties

1. The Contractor shall warrant that all structures and/or equipment installed will conform in kind and quality to the specifications set forth above, and will be free of defect in workmanship and material.
2. The Contractor shall offer a 10-year limited warranty for all aluminum and all posts, clamps, beams, and caps against structural failure due to corrosion, deterioration, or workmanship (cosmetic issues excluded).
3. The Contractor shall offer a 10-year limited warranty for all plastic and steel components against structural failure due to corrosion, deterioration, or workmanship (cosmetic issues excluded).
4. The Contractor shall offer a 1-year limited warranty for all moving parts, swing seats and swing hangers bumpers and other equipment not included above against failure due to corrosion, deterioration, or workmanship.
5. An authorized representative of the play equipment manufacturer must inspect and approve the completed installation. The play equipment will not be accepted by the play equipment manufacturer or the Owner until they are satisfied with the installation. No additional compensation will be given for any necessary corrective work. Contractor shall submit written certification from Manufacturer's Representative that all play equipment has been completely installed in accordance with manufacturer's requirements.

END OF SECTION

SECTION 12 93 00
SITE FURNISHINGS AND IMPROVEMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.2 DESCRIPTION OF WORK

- A. The work of this section includes installation of the site furnishings noted specifically as being purchased by the Town of Arlington directly from the product vendors. The City's purchase includes delivery to the project site. Contractor is responsible for unloading site furnishings from delivery vehicles. All furnishings in this section not specifically noted as Purchased by Owner, shall be furnished and installed by the Contractor whether salvaged from on site or new as indicated in the Contract Documents.
1. DuMor 32-Gal Receptacle with Bonnet Top, TOTAL OF 1
 2. DuMor 6' Backless Bench 92, TOTAL OF 3
 3. DuMor Curved Bench R92, TOTAL OF 3
 4. JayPro Basketball Goal – "The Church Yard", TOTAL OF 1
 5. Fabricated Metal Railings at Landscape Stair
- B. The following items shown on the Drawings and/or noted herein shall be furnished and installed under their Sections of the specifications:
1. Concrete for concrete footings under 32 13 13 CONCRETE.
 2. Grading and Compaction of Sub-Base

1.3 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:
1. Section 01 23 00 - Alternates
 2. Section 31 10 00 – Site Clearing and Preparation
 3. Section 31 23 00 – Excavation Filling and Grading
 4. Section 32 13 13 – Concrete
 5. Section 32 18 16.13 – Playground Protective Surfacing

1.4 SUBMITTALS

- A. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements prior to installation.

1.5 DELIVERY, STORAGE AND HANDLING

- A. The City's purchase includes delivery to the project site. Contractor is responsible for unloading site furnishings from delivery vehicles. Deliver materials and products and provide adequate

protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.6 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- A. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.7 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS AND EXECUTION (Combined)

2.1 OWNER PURCHASED SITE FURNITURE

- A. Please refer to the drawings for the details about site furniture locations.
- B. Refer to APPENDIX A for installation instructions.
- C. The rep for Dumor Site Furnishings and JayPro Products is John McConkey (john.mcconkey@obrienandsons.com)

2.2 FABRICATED METAL RAILINGS

A. Submittals: Manufacturer's data including instructions, recommendations, and restrictions. Submit for each material and product. Provide shop drawings engineered, prepared, sealed and signed by the Contractor's engineer.

B. Basis of Design for the metal railings is by The McNichols Company (<https://www.mcnichols.com/>), Hartford, CT. Tel 877-884-4653 or approved equal

C. Steel pipe and tubing for handrails, piperail fence shall be round seamless steel pipe in accordance with ASTM A53/A53M-99B. Sizes and layout shall be as shown on the drawings.

D. Welding and Finishing:

E. Fabrication; As shown or, if not shown:

1. Match design intent indicated
2. Meet all Codes including barrier free regulations and requirements.
3. Provide welded assembly.
4. Return rail ends to walls or as indicated on drawings.

5. Cap all visible ends and hollow members with welded caps.
6. Fully shop fabricate work to the maximum extent possible.
7. Shop prefit field seams and joints.

F. Touch-up and Repair: For damaged coated surfaces, clean welds, bolted connections and abraded areas:

1. At galvanized surfaces, apply organic zinc repair paint complying with requirements of ASTM A780. Galvanizing repair paint shall have 65 percent zinc by weight. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A123 or A153 as applicable. Touch-up of galvanized surfaces with aerosol spray, silver paint, bright paint, or aluminum paints is not acceptable.
2. Warranty: The galvanizer shall furnish a warranty stating that the galvanizing topcoated in accordance with the specification shall remain free from more than 10% (percent) rust for a period of twenty (20) years.
3. Handling: Galvanizer shall handle, pack, and ship in such a manner as to minimize damage to the finish. Upon arrival at job site it shall be the Contractor's responsibility to take equal precautions. Since some surface damage is inevitable, suitable touch-up material shall be readily available from the galvanizer for the Contractor's use.
4. Shop Drawings: The contractor is required to provide detailed shop drawings for all metal fabrications specified herein.
 - A. Stair Handrails: The Contractor shall submit detailed final drawings plans, sections and elevations for approval prior to ordering materials.

2.3 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

**SECTION 31 10 00
SITE CLEARING AND PREPARATION**

PART 1 – GENERAL

1.0 RELATED DOCUMENTS

This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.1 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment, and services necessary to complete the work of this Section as specified herein, as shown on the drawings, or both. The Contractor shall coordinate site preparation and demolition activities for each phase of construction. Refer to the Drawings for Phasing and items to be salvaged and relocated.
- B. The work of this Section includes, but is not limited to, the following:
 - 1. Staking layout, limits of work and extent of grading
 - 2. Protection of existing improvements to remain
 - 3. Tree protection
 - 4. Clearing and grubbing
 - 5. Stripping and stockpiling topsoil
 - 6. Saw cutting existing pavement
 - 7. Removing bituminous concrete pavement
 - 8. Pulverizing and blending bituminous concrete with existing gravel base
 - 9. Demolition, removal and legal off-site disposal of all existing above grade and subsurface improvements as indicated on the Drawings and as required by the work of this Contract
 - 10. Salvaging materials

1.2 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 23 00 – Excavation Filling and Grading
 - 4. Section 32 16 00 – Asphalt Paving
 - 5. Section 32 13 13 – Concrete
 - 6. Section 32 18 16.13 – Playground Protective Surfacing
 - 7. Section 32 90 00 – Planting
 - 8. Section 32 91 00 – Loam and Planting Preparation
 - 9. Section 32 92 00 – Turf and Grasses
 - 10. Section 33 40 00 – Storm Drainage Utilities

1.3 PROJECT CONDITIONS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional cost will be allowed because of lack of full knowledge of existing conditions.
- B. Refer to APPENDIX B for Soil Test Reports.

- C. Preparation and Workmanship: Except as otherwise specified, site preparation, demolition work and clean up shall be the work of the Contractor. Any item of work not specifically designed to be accomplished by a particular subcontractor shall be considered work of the Contractor.
- C. Traffic: Conduct site clearing and demolition operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- D. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing buildings, paving, services and all other improvements indicated to remain in place. Locate and identify existing underground utilities within project limit lines. Provide adequate means of protection of all utilities to remain. The Contractor shall contact "Dig-Safe" at 1-888-344-7233 prior to beginning any excavation work. The Contractor shall be solely responsible for locating all underground utilities prior to the commencement of work. Locations of existing utilities on the site plans are not warranted to show all existing utilities under or above ground. Existing utilities indicated on the site plans are shown only for the convenience of the Owner's representatives.
 - 1. Protect improvements and surfacing on Owner's property.
 - 2. Restore improvements damaged during construction to their original condition, as acceptable to the Owner and any agencies having jurisdiction.
- E. Protection of existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, damaging heat from paving equipment, excess foot or vehicular traffic, or parking of vehicles within tree canopy drip lines. Provide temporary guards, fencing or any other necessary precautions to protect trees and vegetation to remain.
 - 1. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during the course of construction operations.
 - 2. Repair trees and vegetation indicated to remain that are damaged by construction operations, in a manner acceptable to the Landscape Architect. Employ a licensed arborist to repair damage to trees and shrubs.
 - 3. Replace trees and vegetation that cannot be repaired and restored to full-growth status, as determined by a licensed arborist. Trees determined to be removed due to damage caused by the work of this project shall be removed and replaced at the Contractor's expense with a quantity of approved tree species that match the total tree caliper surface area of the removed trees as measured 12-inches above original grade. Damage requiring tree removal shall include damage to roots, trunk or branches where protection would have prevented such damage. The extent of damage requiring tree removal shall include any one or more of the following: permanent scarring of tree bark, loss of branches or portions of branches that disfigure the tree character, compaction or material contamination of the root zone, damage to roots beyond excavation payment lines, irreversible decline in tree health due to lack of watering.
- F. Dust and Pollution Control: Provide dust control for dust generated by the work of this project. Dampen surface as required or use other approved method. Comply with pollution control requirements of the Town of Andover Board of Health.
- G. Salvageable Improvements: Carefully remove items indicated to be salvaged or reused, and store at the site for future use. Protect such items from accidental damage, vandalism and theft.

- H. Bench Marks: Locate, protect and maintain bench marks, monuments, control points and project engineering reference points.
- I. Regulatory controls: All work within this Section must comply with the requirements of all authorities having jurisdiction.

PART 2 – PRODUCTS

2.1 TREE PROTECTION

- A. Materials for tree protection shall be:
 - 1. Pressure treated southern yellow pine wood posts
 - 2. Spruce or fir wood rails
 - 3. Orange plastic construction safety fence
 - 4. Galvanized hardware

PART 3 - EXECUTION

3.1 SITE ENGINEERING /LAYOUT

- A. Prior to the start of clearing and excavation operations, lay out and stake the new paved areas, limits of cut and fill and work limit lines for the Landscape Architect's review.
- B. Promptly upon completion of layout work, and before any clearing or other construction work is begun, the Contractor shall arrange a conference on the site with the Landscape Architect to review the limits of work areas staked out. The limit of cut and fill shall be clearly marked to determine the extents of tree removal required.

3.2 TREE PROTECTION

- A. Prior to starting any construction work, erect tree protection in accordance with the Detail where shown and as directed by the Landscape Architect in the field.
- B. Within the limit of work, protect all plant materials to remain. No such plant materials shall be used as guys or other fastenings. No material storage, vehicle parking or access routes shall occur under the dripline of trees to remain except where work is specifically shown on the Drawings.
- C. The Contractor shall not cause any damage to trees to remain. If the limits of excavation defined by the Contract Documents require removal of roots of trees to remain, such roots shall be neatly cut after consulting with an Arborist and notifying the Architect.

3.3 CLEARING AND GRUBBING

- A. After the Landscape Architect has reviewed the limit of clearing, remove trees and shrubs as indicated on the Drawings and as required to construct the work of this project.

- B. Grubbing: Completely remove stumps and roots of vegetation indicated to be removed.
- C. All materials from clearing operations shall be removed from the site prior to or by the end of the clearing operations. On-site disposal will not be allowed.
- D. Fill holes, depressions caused by clearing and grubbing operations with fill material and placement conforming to Section 312000 – EARTH MOVING as specified for the proposed improvements. Place fill in horizontal layers, 6 inches in loose depth, and compact to the specified density.
- F. Without exception, any area cleared for any reason by the Contractor, inside or outside the Limit of Work Line and not otherwise developed shall be loamed and seeded at no additional cost to the Owner.
- G. Tree clearing shall include as many separate mobilizations as required by the Contractor's sequence of operations due to the phased nature of the project. A selective clearing operation shall be performed by the Contractor after rough grading has been completed, to remove trees, stumps and vegetation at the limits of cuts and fills as directed by the Landscape Architect in the field.

3.4 STRIPPING AND STOCKPILING TOPSOIL

- A. Prior to the start of General Excavation, strip all topsoil and subsoil from within areas to be re-graded keeping the topsoil completely separate throughout the stripping and stockpiling operation. Do not commence the stripping operation without a clear understanding of the existing soil depths, planting and site conditions to be preserved and limits of topsoil stockpile and stripped areas.
- B. All topsoil encountered during the stripping operations, regardless of depth, shall be removed and stockpiled on the site as shown on the Drawings or where directed by the Architect or removed from the site if the Contractor determines there is adequate topsoil to complete the work and after approval by the Architect. Areas having greater depths of topsoil than indicated on boring data sheets or reasonably anticipated shall be stripped of all such material and fill shall be used to bring such areas to the rough grade level. Stones over six inches and tree roots over two inches in any dimension shall be removed from loam before stockpiling. Stripped soil that can be classified as fill as defined in Section 31 20 00 – EARTH MOVING, shall be stockpiled for reuse in rough grading. This material shall be stripped separately from the topsoil. Topsoil and organic materials due to be stripped are as follows:
- C. The Contractor shall control the stripping operation so that the topsoil does not become contaminated with subsoil or other earth materials. The Contractor shall use machinery suitable for achieving this result.
- D. Subsoil: The material directly below the topsoil shall not be considered usable as Ordinary Fill as specified in Section 31 20 00 – EARTH MOVING or for topsoil. The only area where subsoil may be used is under areas with new landscape planting. Subsoil shall be stripped separately from the topsoil and from the underlying earth materials. Subsoil shall be stripped as follows:
 - 1. Building Structures, Roads, Parking Areas and other site improvements except lawn areas - remove completely.
 - 2. Future Lawn Areas - not necessary to remove in fill condition. However, subsoil shall be removed from adjacent proposed buildings, structures, site improvements, roads and parking areas a distance equal to the depth of fill plus three feet in the particular location,

i.e. for a five foot fill, subsoil shall be removed a minimum of eight feet away from the adjacent site improvements.

- E. All excess subsoil encountered in earthwork operations shall be removed from the site and legally disposed of. Topsoil shall be stockpiled as described hereinabove.

3.5 BITUMINOUS CONCRETE

- A. Remove and legally dispose of all bituminous concrete paving indicated on the Drawings to be removed and all other paving required to be removed in order to construct the Project.
- B. Saw cut existing bituminous paving at all locations where pavement to be removed or pulverized meets existing pavement to remain and where new pavement meets existing pavement to remain. Sawcuts shall be made with sharp tools and blades to provide a clean, straight and vertical cut line. Use carbide or other type blade intended for that purpose.
- C. Reclaimed Base Course – Pulverize and Blend: In existing bituminous paved areas that will be paved with new bituminous concrete as part of the work of this project, the existing bituminous pavement shall be uniformly crushed, pulverized and blended with the underlying gravel base to a minimum depth of nine inches. This work shall conform to The Commonwealth of Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges, latest edition Section 403 Reclaimed Base Course.
 - 1. All pulverized material shall pass the 3-inch sieve, and be free of all clay, loam, brick or deleterious material.
 - 2. Prior to pulverizing the existing pavement, the Contractor shall locate and protect existing utility structures and underground pipes, culverts, conduits and other appurtenances to remain. If the upper sections of utilities are removed to facilitate pulverizing the existing pavement, the remaining part of the structure designated to remain shall be immediately covered with a steel plate capable of withstanding a 36.5 ton truckload with impact.
 - 3. The Contractor shall submit to the Landscape Architect for approval a description of equipment and the process to be used for pulverizing and blending the existing pavement. The pulverizing operation shall be controlled in such a manner that the resultant material will be free from excessive fine material, with material passing the No. 200 sieve not to exceed 8% by weight.

3.6 ABOVE AND BELOW GRADE IMPROVEMENTS

- A. Remove and legally dispose of all existing above and below grade improvements necessary to allow construction of all work of this Contract including but not limited to footings, playground equipment, pipes, tanks, concrete slabs, castings, curbing, walls, fencing, signage and any and all other improvements inside or outside the contract limits except items indicated on the Site Preparation Plan to be preserved and protected or removed and salvaged. Remove walls and other obstructions to a depth of at least 2 feet below finished grades and as required to construct the subsurface improvements of this project.
- B. Abandonment, relocation, partial removal or complete removal of certain existing underground and above ground utilities including, but not limited to pipes, tanks, castings, conduits, electrical wiring and poles shall be performed as indicated on the Drawings.

3.7 SALVAGING MATERIALS

- A. The Landscape Drawings depict specific memorial artifacts to be salvaged and relocated in the new design. The Contractor shall review these items in person with the Landscape Architect prior to any site demolition in these areas. Items to be salvaged include:

1. Community Board at Bishop
2. Memorial Brick Pavers at Bishop
3. Memorial Stone at Stratton
4. Memorial Brick Pavers at Stratton
5. Rubber Tires at Bishop
6. Buddy Benches (2) at Peirce
7. Play Equipment Steppers at Stratton
8. Gaga Pit at Stratton

B. Salvaged items shall be carefully removed, cleaned and stored in a protected area until the new site conditions are prepared for their reinstallation.

3.8 DISPOSAL OF WASTE MATERIALS

- A. Removal from Owner's property: Remove all waste materials from Owner's property in timely and responsible manner and legally dispose of off-site. Accumulation is not permitted. Maintain disposal routes clear, clean and free of debris. Dumping and / or burning of material on site will not be permitted.

3.9 CLEAN UP

- A. Keep pavements and areas adjacent to and leading from the site, clean and free of mud, dirt and debris.
- B. At completion of the work of this Section, remove materials generated by site clearing. Do not spill or disperse debris on the site. Leave the site in a safe and clean condition acceptable to the Architect.

END OF SECTION

**SECTION 31 23 00
EXCAVATION, FILLING AND GRADING**

PART 1 - GENERAL

1.01 General Requirements

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the owner or owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.

1.02 Work Included

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Earthwork as shown on the Drawings and as specified herein.
 - 1. Excavating, filling, trenching and backfilling of all descriptions required for the construction of pavements, safety surfaces, equipment, site improvements, utilities, filling voids left by hardscape and plant removals, and all specialties. Provide all additional fill materials as required and specified herein.
 - 2. Pumping and/or bailing necessary to maintain excavated spaces free from water from any source whatsoever.
 - 3. Dust control.
 - 4. Provide graded materials, as specified, for fills, base courses and backfills as required.
 - 5. Rough grading.
 - 6. Perform all compaction of fill materials as hereinafter specified.
 - 7. Obtain all required permits, licenses and approvals of appropriate municipal and utility authorities prior to commencing work, pay all costs incurred therefrom.
 - 8. If subgrade is deemed unsuitable for placement of subbase material, backfill w/ processed gravel. Work under this Section shall include the excavation of 20 cubic yards of unsuitable material beyond the line and grades as shown on drawings, and as determined by the Landscape Architect. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and

verifications.

- B. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Somerville and coordinate all work under this Section therewith.
- C. The following related items are included under the Sections listed below.
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishing
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 32 12 16 – Asphalt Paving
 - 5. Section 32 13 13 – Concrete
 - 6. Section 32 18 16.31 – Playground Protective Surfacing
 - 7. Section 32 90 00 – Planting
 - 8. Section 33 91 00 – Loam and Planting Preparation
 - 9. Section 33 40 00 – Storm Drainage and Utilities

1.03 Submittals

- A. Submit certified gradation test data for borrow materials a minimum of one week prior to delivery to the site.
- B. Provide 50-pound samples of each material to a qualified laboratory for moisture density testing a minimum of one week prior to delivery to site.
- C. Compaction test of subbase materials after installation and compaction and before surface material is installed.

1.04 Laws, Ordinances, Permits and

Fees The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City of Somerville and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.
- D. The Contractor shall provide a temporary sidewalk whenever a sidewalk is closed because of the construction. This temporary sidewalk must be at the same level as the existing closed sidewalk and it must be visually partitioned off from the street and

work area. The Contractor shall so conduct his operations as to interfere as little as possible with roads, driveways, alleys, sidewalks, or other nearby facility.

1.05 Definitions

- A. The following related items are included herein and shall mean:
1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Transportation, latest edition
 2. A.S.T.M. - American Society for Testing and Materials
 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
- B. "Excavation" consists of removal of material encountered to subgrade elevations indicated and disposal of materials removed.
- C. "Finished grades" as used herein shall mean the required final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas shall be given uniform slopes between points for which finished grades are indicated or between such points and existing established grades.
- D. "Base Course" as used herein is the placed and compacted material immediately below the finish grade material to the thickness indicated on the Drawings.
- E. "Subgrade" as used herein means the naturally occurring or placed and compacted material below the base course.
- F. "Trench Excavation" is defined as an excavation of any length where the width is less than twice the depth and where the distance between the pay lines does not exceed ten feet.
- G. "Open Excavation" is defined as all other excavation.
- H. "Unauthorized excavation" is defined as excavation beyond approved measurement lines.
- I. "Unsuitable materials" are soils containing organic matter, materials subject to attack from termites, materials subject to decomposition, soils too wet to be stabilized, frozen materials and existing materials that do not satisfy the product specification herein. Weak or soft material resulting from any of the Contractor's operations shall not be considered "unsuitable material".
- J. "Excess material" is any excavated material that is not needed for the construction of

project elements. The removal of excess material from the site shall be included in the Base Bid Contract.

- K. Rock excavation shall be defined as solid, continuous rock or concrete mass, unable to be removed without mechanical measures and larger than 1 cubic yard in size. All other rock shall be unclassified excavation included in the contract bid price.

1.06 Bench Marks and Engineering

- A. Lines and grade work in accordance with Drawings and Specifications shall be laid out by a registered Civil Engineer or registered Surveyor employed by the Contractor. The Contractor shall establish permanent bench marks, to which access can easily be had during the progress of the work. The Contractor shall maintain all established bounds and bench marks and replace, as directed, any which may be disturbed or destroyed. The selection of the registered Civil Engineer or Surveyor shall be approved by the Landscape Architect.
- B. The Contractor shall submit written confirmation of dimensions and elevations on the ground and report any discrepancies immediately to the Landscape Architect. Such confirmation shall bear the Engineer's registration stamp. Any discrepancies not reported prior to construction shall not be the basis of claims for extra compensation.
- C. The General Contractor shall not commence any excavation or construction work, until the Landscape Architect's verification has been received and approved by the Official.

1.07 Subsurface Information

- A. Refer to the Existing Conditions Base Plan for surveyed information. The Owner, the Landscape Architect and the Surveyor shall not be responsible for the interpretations or conclusions made by the Contractor based on this information. This Existing Conditions Base Plan is provided so that the Contractor can familiarize himself with the expected conditions when preparing his bid. If the Contractor encounters subsurface conditions considered to be different than those presented in the Contract Documents, the Contractor shall notify the Architect in accordance with the General Conditions.
- B. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation and makes no warranty regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.

1.08 Finished Grades

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

1.09 Grades and Elevations

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference and to adapt the grading to other special conditions encountered.

1.10 Work in the Public Ways

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Somerville, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

1.11 Disposition of Existing Utilities

- A. Active utilities existing on the site shall be carefully protected from damage and relocated or removed as required by the work. When an active utility line is exposed during construction, its location and elevation shall be plotted on the Record Drawings and both the Landscape Architect and the Utility Owner notified in writing.
- B. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped in accordance with procedures of relative utility company or agency. The location of such utilities shall be noted on the Record Drawings and reported in writing to the Landscape Architect.
- C. Active utility lines damaged in the course of construction operations shall be repaired or replaced as determined by the Landscape Architect without additional cost to the Owner.
- D. Notify the Owner at least three (3) days in advance of the proposed time for shutting down or interrupting utilities or services which may affect operation of adjoining properties. Unless otherwise authorized by the Owner, schedule such interruptions on weekends, holidays, or before or after Owner's normal working day. In no case shall any services or utilities be interrupted prior to notification and authorization by the Owner.

1.12 Protection

- A. All rules and regulations governing the respective utilities shall be observed in

executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing streets, curbs, paving, service utility lines, structures and adjoining property. Monuments and bench marks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.

- B. The Contractor shall perform the installation, maintenance and removal of all sheet piling, shoring and bracing required for the protection of all items of this Contract affected by the work of this Section.
- C. The Contractor shall furnish all facilities and materials necessary to prevent the earth at the bottom of excavation from becoming frozen or unsuitable to receive footing or other load bearing units.
- D. The work of this Section shall be performed in such a manner as to cause no interference with access by the Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.
- E. Protect all areas to remain undeveloped outside the Contract limit lines. Should these areas be damaged, the Contractor shall restore them to the satisfaction of the Landscape Architect and Owner at no additional cost to the owner. This includes the repairing and replacement of all damaged conditions such as plant materials and similar items.

1.13 Samples and Testing:

- A. All fill material and its placement shall be subject to quality control testing. Contractor will submit the name of a qualified laboratory to perform test on materials, for Approval by Landscape Architect. The Contractor will pay for all costs of testing. Test results and laboratory recommendations shall be available to the Landscape Architect. Submit one test for each material source proposed for use.
- B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate source if required. The Landscape Architect will be sole and final judge of suitability of all material.
- C. The laboratory will determine maximum dry density and optimum water content in accordance with ASTM D1557, Method D and the in-place density in accordance with ASTM D1556.
- D. Sampling and testing material delivered to the site shall be performed to ensure material conforms to approved submittals. Materials in question may not be used, pending test results. Compaction tests shall be performed on placed fill materials. Materials that do not conform to the specified physical or performance requirements shall be removed and replaced with acceptable materials at the Contractor's expense.
- F. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests.
- G. Gravel Borrow shall be laboratory tested for permeability prior to approval in accordance with ASTM D 2434 Permeability of Granular Soils (Constant Head).

PART 2 – PRODUCTS

2.01 Fill Materials

A. Ordinary Fill

1. All material to be placed where the Specifications or Drawings call for Ordinary Fill shall be well-graded, natural, inorganic mineral soil approved by the Landscape Architect and shall have the physical characteristics of soils designated as group A-1, A-2-4, or A-3 under AASHTO-M145.
2. Ordinary Fill shall be free of organic or other weak or compressible materials, of highly plastic clays, of all materials subject to decay, decomposition or dissolution, of cinders or other materials which will corrode piping or other metal, of frozen materials, and of stones larger than 6 inches.
3. Ordinary Fill shall be of such nature and character that it can be spread and compacted to the specified density in a reasonable length of time.
4. Soil for use as Ordinary Fill shall contain no more than 35 percent by weight passing the No. 200 sieve.
5. It shall have a maximum dry density of one hundred pounds per cubic foot.

B. Gravel Borrow

1. All paving shall be installed over compacted graded gravel; all footings and all voids left from equipment removal shall be filled with compacted graded gravel.
2. All gravel fill shall meet the specifications of M1.03.1 "Processed Gravel for Subbase" in S.S.H.B. Submit sample and test results for approval.

Sieve Size	Percent Finer by Weight
2-inch	100
1/2-inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-8

C. Crushed Stone (Drainage Stone):

1. Drainage stone, or crushed stone, shall be 3/4" and (except where other size indicated on the Drawings) clean, angular stone of a hardness suitable for use in structural applications. 3/4" stone shall comply with M2.01.4 and 1/2" shall comply with M2.01.5 in S.S.H.B.

Percent Passing by Weight		
Sieve Size	3/4-inch Stone	1/2-inch Stone
1-inch	100	---
3/4-inch	90-100	---
5/8-inch	---	100
1/2-inch	10-50	85-100
3/8-inch	0-20	15-45
No. 4	0-5	0-15
No. 8	---	0-5

- D. Base Drainage Stone (for Poured in Place Rubber) shall consist of clean, hard, crushed aggregate that is angular and durable derived from a stone quarry free of all deleterious materials. Gradation of sample provided for testing and approval shall be within the following range:

<u>U.S. Sieve No.</u>	<u>Percent Passing By Weight</u>
2"	100
1-1/2"	90 – 100

1"	75 - 100
3/4"	65 - 95
1/2"	55 - 85
3/8"	40 - 75
1/4"	25 - 65
No. 4	15 - 60
No. 8	0 - 40
No. 16	0 - 20
No. 30	0 - 7
No. 50/60	0 - 5
No. 100	0 - 3
No. 200	0 - 2

Crushed Stone Base for PIP Rubber shall be crushed so it compacts to a 95% Standard Proctor Compaction.

- a. To ensure proper drainage (When stone is saturated and compacted to 95% Proctor):
 - 1) Permeability > 50 in/hr (3.5×10^{-2} cm/sec)
 - 2) Porosity of stone > 25%
 - 3) Laboratory test: ASTM D 2434 Permeability of Granular Soils (Constant Head)
 - 4) Field test: ASTM D 3855, Method for Infiltration Rate of Soils Using Double-Ring Infiltrometer
 - 5) Material shall be tested and results shall be reviewed by a City of Somerville Engineer for compliance.
- b. Soft aggregate materials such as sedimentary rock sources are not acceptable. Questionable materials shall be evaluated using a sulfate soundness test (ASTM C-88) and LA Abrasion Test (ASTM C-131) and shall be within the following criteria:

Test Method	Criteria
Sulfate Soundness (ASTM C-88)	Not to exceed 10% loss
LA Abrasion (ASTM C-131)	Not to exceed 20% loss

E. Filter Fabric

1. Filter Fabric shall consist of Mirafi 140 N or approved equivalent.
2. Filter Fabric used, as a drainage medium shall consist of a non-woven fabric made from polypropylene or polyethylene filaments or yarns. The fabric shall be inert to organic chemicals commonly encountered in the soil. The fabric shall conform to the following recommended property tests:

Property	Unit	Test Method	Minimum Value
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Weight	oz/sy	ASTM D-3776-84	4.5
Grab Strength	lbs	ASTM D-4632-86	120
Grab Elongation	percent	ASTM D-4632-86	55
Trapezoid Tear Strength	lbs	ASTM D-4533-85	50
Mullen Burst Strength	psi	ASTM D-3786-80	210
Puncture Strength	lbs	ASTM D-4833-88	70
Apparent Opening Size (AOS)	U.S. std. Size Sieve	ASTM D-4751-87	70

2. USES OF MATERIALS

Fill materials listed above shall be utilized as follows and as otherwise indicated on the Drawings, specified or directed.

B. Gravel Borrow:

1. Directly below exterior surface treatments consisting of concrete surfaces as shown on the Drawings.
2. Elsewhere as shown on the Drawings or specified herein.

C. Ordinary Fill:

1. For general site fill where Crushed Stone or Gravel Borrow are not specified.

D. Crushed Stone:

1. For a minimum 3-inch thickness over all concrete footing bearing surfaces.
2. Elsewhere as shown on the Drawings or specified herein.

E. Sand:

1. As shown on the drawings or specified herein.

F. Filter Fabric:

1. Place Filter Fabric around the $\frac{3}{4}$ " Crushed Stone surrounding drain pipes
2. Elsewhere as shown on the Drawings or specified herein.

G. Dense-Graded Crushed Stone:

1. As shown on the Drawings or specified herein.

H. Base Drainage Stone for PIP Rubber:

1. Directly below exterior surface treatments consisting of poured in place rubber surfaces as shown on the Drawings or specified herein.

PART 3 - EXECUTION

3.01 Grades and Elevations

- A. Establish the lines and grades in conformity with the Drawings. Establish and maintain suitable stakes or batters at points where spot elevations are given on the Drawings and at any other points to be graded as directed by the Landscape Architect. Maintain sufficient reference points at all times during construction to properly perform the Contract installation.

3.02 Excavation

- A. Prior to any excavation, contact DIG-SAFE at 1-888-344-7233 to identify subsurface utilities within the work area.
- B. General
 - 1. Excavate all material to the elevations, dimensions and form as shown on the Drawings and as specified for the construction of site improvements and other structures necessary for the completion of the utilities and site work. All unsuitable materials within the indicated and specified limits shall be excavated and removed at no additional cost to the contract as specified in 1.02 (B-8) of this section. Any quantities involving an extra or other adjustment of the Contract Price shall be subject to measurement verification and approval by the Landscape Architect prior to the excavation and removal of such materials. Unsuitable materials shall include the following:
 - a. Utility structures, building foundations and other man-made structures.
 - b. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
 - c. Miscellaneous fill including cinders, ash, glass, wood, and metal.
 - 2. In general, the Contractor shall be permitted to use machine excavation except for the final six (6) inches under footings, foundations, utility lines and structure, which shall be hand work.
 - 3. If any part of the excavation is carried through error beyond the depth and dimensions indicated on the Drawings or specified herein, or if the foundation soils are disturbed by dewatering or other construction operation, the Contractor shall, at his own expense, refill with structural fill compacted to ninety-five (95) percent of the maximum dry density at optimum moisture content.
 - 4. When excavation has reached the prescribed depth, the Landscape Architect shall be notified and will make an inspection of the condition and approve the placing of fill material.

The Contractor shall obtain from the proper authorities locations of all utilities within the scope of this work so that there will be no damage done to such utilities. Neither the Owner nor the Landscape Architect will be responsible for any such damage, and the Contractor shall restore any structure or utility so damaged without additional compensation. Attention is called to that fact that there are electric lines, and other utilities in certain locations within and adjacent to the sites. Written notifications to the appropriate utility agencies shall be made at least ten (10) days prior to the commencement of any work.

Wherever culverts, sewers, drains, manholes, catch basins, catch basin connections, water mains, valve chambers, utility tunnels, gas pipes, electric and telephone conduits, house service connections of any other underground constructions are encountered in excavating for utilities or any other site work, they shall be protected and firmly supported by the Contractor, at his own expense, until the trench is backfilled and the existing structures are made secure. Injury to any such structures caused by or resulting from the Contractor's operations shall be repaired at the Contractor's expense. The authority having charge of any particular underground structure shall be notified promptly of damage to its structure.

Excess material - Suitable excavation material which is allowable for fill and backfill shall be separately stockpiled as directed by the Landscape Architect. All surplus fill other than that required to complete the intent of the Contract shall become the property of the Contractor and shall be legally disposed of off the property. All excavated materials which, in the opinion of the Landscape Architect are not suitable for fill and backfill shall be removed and legally disposed of off the property.

Any unsanitary conditions encountered, such as broken sewer mains or uncovered garbage, shall be corrected or removed entirely as directed by the Landscape Architect.

C. Excavation for Site Improvements.

1. Excavate to the lines and grades shown on the Drawings and as specified to obtain the subgrades for the site improvements.
2. Trenching for all water and drain lines shall comply with the standards in S.S.H.B., specifically Section 150.64.
3. Existing service and utilities encountered shall be immediately repaired, protected and maintained in use until relocation of same has been completed or to be cut and capped where directed or be prepared for connection when so required.

3.03 Subgrade Preparation and Protection

A. General Requirements

1. All subgrade areas shall be made ready for fill by removal of all organic material, unsuitable soils and deleterious materials to firm natural ground as directed by the Landscape Architect.
2. Scarify, spot-fill, or otherwise treat the surface of areas to receive fill as necessary to remove holes, depressions, ruts, hummocks, or other uneven features.

B. Proof Rolling Subgrades

1. Prior to placement of fill, or bottom filter fabric where shown on drawings, proof roll natural ground by making a minimum of two passes with approved compaction equipment. Proof rolling may be waived by the Landscape Architect where excessively wet or saturated subgrade conditions are encountered.

3.04 Protection

- A. Protect open excavations with fencing, warning lights and other suitable safeguards. No open excavation shall be left without proper barriers and other devices necessary for public safety.
- B. Comply with local safety regulations or, in the absence thereof, with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc. and O.S.H.A.
- C. Frost Protection - Make no excavation to the full depth indicated when freezing temperature may be expected unless the footing or slabs can be poured immediately after the excavation has been completed. Protect the bottoms as excavated from frost, if placing of concrete is delayed, with straw, tarpaulins or temporary heat until footings or slabs poured and backfill is placed.
- D. Any ditching required to keep the site free from water during construction is the responsibility of the Contractor.

3.05 Fill and Compaction

A. Compaction Equipment and Density Requirements

1. Compaction equipment, unless otherwise specified, shall consist of heavy vibratory rollers, such as a Raygo 400 or other compaction equipment approved by the Landscape Architect. Equipment shall make a minimum of four (4) passes to achieve compaction as specified; to provide an evenly dense and compacted thickness throughout. All ruts shall be filled, the surface even and compacted to the density called for. The Landscape Architect retains the right to disapprove the use of any equipment that does not meet the above Specifications or perform the work as intended. Any modifications of equipment or method must be approved by the Landscape Architect.
2. Fill material under pavements and structures shall be compacted to ninety-five (95) percent of maximum density(s) determined by A.S.T.M. Test Designation D-1557, Method D or A.S.T.M. D-1556. For fill to 30" depth within seeded and planted areas compact portion of fill for planting to at least 80 percent but not more than 90 percent of the material's maximum dry Proctor density

- a. Fill material under synthetic turf shall be compacted to. 92% min - 95% max of maximum density(s) determined by A.S.T.M. Test Designation D- 1557, Method D or A.S.T.M. D-1556

3. Refer to 1.13 in this Section for testing requirements.

B. Placing Fills and Compacting

1. Notify the Landscape Architect when excavation is ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.
2. Fill material shall be placed in horizontal layers not exceeding six (6) inches. Each layer shall be compacted to the percentage of maximum dry density specified for the particular type of fill and at a water content equal to optimum dry density and optimum water content shall be as specified herein.
3. Where water content of the fill must be adjusted to meet this Specification, the fill shall be thoroughly disked to insure uniform distribution of any water added.
4. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when materials or layers below it are frozen.
5. In confined areas adjacent to footings and foundation walls and in utility trenches, the fill shall be compacted with hand-operated vibration tampers. The maximum lift thickness shall be four (4) inches. The degree of compaction attained shall be equivalent to that attained in the adjacent open areas where heavy rolling equipment is used. Any areas which subsequently settle shall be refilled to true subgrade and properly compacted.

3.06 Grading

- A. Do all grading required for the work including shaping, trimming, rolling and finishing of the surface of the subgrades for all surfaces. All ruts shall be eliminated. Grading for subgrades for paved areas and synthetic turf shall be finished at the required depth below and parallel to the proposed surface within 1/4" in 10'-0" tolerance.
- B. If, during the progress of rough grading work, any water pipe, sewer, conduit, drain, or other construction is damaged as a result of operations under this Contract, the Contractor shall repair all such damage at no additional cost to the Owner and restore work to its original condition.
- C. Do all other cutting, filling and rough grading to the lines and grades indicated on the Drawings. Grade evenly to the finished grades shown on the Drawings. No stone larger than 2" in largest dimension shall be placed in upper 6" of fill.
- D. Complete grading operations after site improvements are constructed, and all materials, rubbish and debris removed from the site. Leave subgrade for planting clean at required grades. Provide sufficient grade staking to witness correct lines and grades, as determined by the Landscape Architect.
- F. Where streets or sidewalks within or outside the limit of Contract lines have been

excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the limit of Contract line.

- G. Fine grading of the gravel borrow base and top stone for the synthetic turf field shall be performed with laser-guided grading equipment required to achieve the tolerances specified herein.
- H. Tolerances

<u>Area</u>	<u>Max Grading Tolerance +/-</u>
1. Subgrade in landscaped areas prior to placement of loam	1/2"
2. Gravel base under pavement	1/4" in 10'
2. Top Stone under synthetic turf	3/16" in 10'

END OF SECTION

**SECTION 32 12 16
ASPHALT PAVING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, Division 0 and Division 1, General Requirements, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install ASPHALT PAVING, as indicated on the Contract Documents and as specified herein.
- B. The work of this Section includes, but is not limited to the following:
 - 1. Gravel base course construction
 - 2. Hot mix asphalt paving
 - 3. Patching and resurfacing disturbed paved areas

1.3 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:
 - 1. Section 31 23 00 – Excavation Filling and Grading
 - 2. Section 32 13 13 – Concrete
 - 3. Section 32 90 00 – Planting
 - 4. Section 32 91 00 – Loam and Planting Preparation
 - 5. Section 32 92 00 – Turf and Grasses
 - 6. Section 33 40 00 – Storm Drainage Utilities

1.4 SUBMITTALS

- A. At least 30 days prior to intended use, submit material certificates signed by material producer and Contractor indicating that products comply with requirements. Provide master mix formula for all bituminous concrete specified in this Section, listing quantities and pertinent ingredient properties for review and approval. Submit product data for traffic marking paint.
- B. Submit aggregate samples for review and approval.
- C. Do not order materials until Architect's approval of mix formula has been obtained. Delivered materials shall closely match the approved samples.
- D. Submit product data for traffic marking paint.

1.5 PROJECT CONDITIONS

- A. Weather: Perform work only when existing and forecasted weather conditions are within the limits established by referenced standards. Perform work only when ambient temperature is forecasted to be at least 50-degrees Fahrenheit and when temperatures have not been below

35-degrees Fahrenheit for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess amount of moisture or is in a frozen state.

- B. Asphalt paving shall not be applied until the finished compacted gravel base has been tested and approved. A delay in paving after the gravel base is tested and approved may require recompaction and testing at no additional cost to the Owner.
- C. Construction methods, transportation and delivery of mixtures, spreading, finishing, compaction joints, etc. shall conform to Section 460 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges unless otherwise specified herein.
- D. Substrates: Proceed with work only when substrate construction and penetrating work is complete and base is dry.
- E. Traffic Control: Maintain access for vehicular and pedestrian traffic as required and for other construction activities.
- F. Grade Control: Establish and maintain required lines and elevations.

1.6 REGULATORY REQUIREMENTS

- A. Strictly comply with applicable codes, regulations and requirements of authorities having jurisdiction.

1.7 QUALITY ASSURANCE

- A. Bituminous concrete shall be prepared, mixed, transported, placed, compacted and finished in accordance with the requirements set forth in the latest edition of the "Standard Specifications for Highways and Bridges" (hereinafter referred to as "SSHB"), as published by the Massachusetts Department of Transportation.

1.8 TESTING

- A. During the placing and rolling operation, repeated checks shall be made to ascertain the correct rate of application to provide the required compacted thickness
- B. If the average thickness is deficient from the specified thickness by one quarter (1/4) inch or more, the extent of the deficient area shall be corrected at the Contractor's expense.
- C. Upon completion of testing, the Contractor shall properly fill all test holes by compacting a fine aggregate bituminous concrete for the full depth of the core. The finished surface shall be smooth.

1.9 COORDINATION

- A. This Contractor shall coordinate with all other trades especially grading, curb installation, electrical and plumbing contractors, through the General Contractor in order to prevent covering up unfinished or uninspected work and loss of time or labor by mis-scheduling and to assure the steady progress of all work of the Contract. Any rework shall be done at no cost to the Owner.

1.10 LAYOUT AND GRADES

- A. A Registered Land Surveyor or Registered Professional Engineer employed by the Contractor shall lay out all lines and grade work in accordance with the Contract Documents.

1.11 DISTURBING EXISTING PAVEMENT DURING CONSTRUCTION

- A. Existing paved areas shall be protected from damage by construction activities to the extent possible. Where sections of the finished paved areas have to be removed, the edges shall be saw cut in all cases and patched.
- B. Existing finished paved areas that require extensive cutting and patching or have become damaged and cannot be satisfactorily repaired by cutting and patching shall be resurfaced. These resurfaced areas shall be large enough to be applied by paving machines. Shape of these resurfaced areas shall be near and in rectangular patterns or shall conform to the shape or edges of other adjacent surface improvements. Edges of resurfaced areas shall be saw cut and existing pavements shall be removed from a distance of two feet into areas to be resurfaced, so that new pavement can neatly blend into existing pavement showing no joints or imperfections. If the gravel base course has been disturbed, the Contractor shall remove the disturbed material, repair the existing gravel base and apply a new binder course as specified herein.
- C. All paving beyond the project's property line shall be in accordance with the requirements of the authority having jurisdiction. Provide traffic control for any work within the Town's Right-of-Way.

PART 2 - PRODUCTS

2.1 GRAVEL BASE COURSE

- A. Subgrade preparation and gravel base course shall be furnished and installed as specified under 31 23 00 EXCAVATION FILLING AND GRADING. Starting Asphalt Paving work specified herein shall constitute acceptance of the base course conditions. Any defects in work resulting from such conditions shall be corrected under this Section 31 12 16 Asphalt Paving, at no additional cost to the Owner.

2.2 ASPHALT PAVING MATERIALS AND PRODUCTS

- A. Coarse Aggregates: Provide clean, sound, angular crushed stone, crushed gravel, complying with ASTM D 692-88.
 - 1. Use of Recycled Asphalt Pavement (RAP) in the binder course and for asphalt driveways, parking lots and walkways shall be limited to a maximum of 20% in the binder course and 10% in the top course provided that the end product is in conformance with the designated job-mix formula. For any bituminous mixture containing RAP, the Contractor shall submit in addition to the Job-Mix formula, the amount and type of asphalt modifier to be added to the mixture to restore the asphalt properties of the RAP to a level that is consistent with the requirements for new asphalt.
- B. Fine Aggregate: Provide sharp-edged natural sand or sand prepared from stone, gravel or combination thereof, complying with ASTM D 1073.
- C. Bituminous material for tack coat shall be one of the following:
 - 1. Cut-back asphalt (rapid curing type) conforming to AASHTO M81, Grade RC-70 or
 - 2. Emulsified asphalt rapid-setting type conforming to AASHTO M140, Grade RS-1

- D. Bitumen asphalt cement for the mixture shall conform to SSHB M3.01.0 and AASHTO M 226, Table 2 with the additional requirement of Ductility at 60 degrees Fahrenheit.
- E. Bituminous crack sealer shall be a hot-applied bituminous sealer conforming to Fed. Spec. SS-S-1401.

2.3 ASPHALT PAVING MIXES

- A. Provide Class I Bituminous Concrete Pavement, Type I-1 in compliance with Section 460, Paragraph 460.40, SSHB and Article 2.2 ASPHALT PAVING MATERIALS AND PRODUCTS.
 - 1. Binder Course and Top Course shall conform with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB
 - 2. The Binder Course shall consist of one lift of Binder Course asphalt paving to thickness as shown on the Contract Documents. RAP content shall not exceed 20%. The aggregate for the binder course shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
1"	100
3/4"	80 – 100
1/2"	55 - 75
#4	28 – 50
#8	20 - 38
#30	8 – 22
#50	5 - 15
#200	0 - 5
Bitumen % of mix	4.5 - 5.5

- 3. The Top Course for driveways, parking lots and walkways shall consist of one lift of Top Course asphalt paving to thickness as shown on the Contract Documents. RAP content shall not exceed 10%. The surface tolerance after completion shall be 3/16 inch when measured in any direction with a 10 ft. straightedge. The aggregate for the top course shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
5/8"	100
1/2"	95 – 100
3/8"	80 - 100
#4	50 - 76
#8	37 - 54
#30	17 - 29
#50	10 - 21
#200	2 - 7
Bitumen % of mix	5.5 – 7.0

PART 3 - EXECUTION

3.1 GRAVEL BASE COURSE

- A. Subgrade preparation and gravel base course construction shall be performed in accordance with 31 23 00 EXCAVATION FILLING AND GRADING to meet the grades indicated on the Drawings and obtain a foundation of uniform bearing surface.

3.2 INSTALLATION OF ASPHALT PAVING

- A. Preinstallation examination required: The Installer of asphalt paving shall examine the sub base and all related work, and the conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of their work. Beginning work means Installer accepts substrates, previous work, and conditions.
- B. Reference Standards: Install asphalt concrete in strict compliance with Sections 460.60 through 460.68 of the State Standard Specifications, except where more restrictive requirements are specified.
- C. Subbase Inspection: Do necessary grading in addition to that specified under Section 31 20 00 Earth Moving to bring sub-grade to required grades and sections for bituminous pavement base course construction. Tamp traces of trenches. Remove spongy and otherwise unsuitable material and replace with approved material. Loosen exceptionally hard spots and recompact. Take every precaution to obtain a foundation of uniform bearing strengths. Any defects in this work shall be corrected under this Section at no additional cost to the Owner.
- D. Gravel Base Course Preparation: shall consist of approved gravel fill and placed on approved subgrade to the depth indicated and as specified under Section 31 23 00 EXCAVATION FILLING AND GRADING. The surface of the gravel base shall be shaped to the cross section of the pavement. The start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied.
 - 1. The gradation shall conform to Gravel Borrow as specified in Section 31 23 00 EXCAVATION FILLING AND GRADING. Gradation shall be determined by a mechanical wet sieve analysis and in accordance with ASTM D-422.
 - 2. The gravel shall be spread in layers from self-spreading vehicles or with power graders of approved types, or by hand methods upon the prepared subgrade. The gravel shall be compacted to not less than 95-percent of the maximum dry density of the material as determined by the Method of Test for ASTM Designation D - 1557, Method D. Grading and compaction shall continue until the surface is even and true to the proposed lines and grades within a tolerance of 3/8-inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding 3/8-inch under a ten foot line longitudinally. Any specific area which after being rolled, does not form a satisfactory, solid foundation shall be removed, replaced and recompact. The gravel shall be spread and compacted in layers not exceeding 6-inches in compacted thickness. The Contractor shall furnish, set and maintain all line and grade stakes necessary to guide the automated grade control equipment.
 - 3. Contractor shall maintain the gravel base course in an acceptable condition, protected from traffic, erosion and other elements until the asphalt paving is placed.
 - 4. After the subgrade and /or existing pavement surfaces have been prepared as specified herein, the Contractor shall check all frames, covers, grates, water valve boxes and all miscellaneous castings that are located in the proposed pavement area to insure that all such items have been accurately positioned and set to the proper slope and elevation. All covers and grates shall be set flush with the required finished pavement surface. No depressions or mounds will be permitted in the pavement to accommodate inaccuracies in the setting of these appurtenances.
 - 5. For reclaimed base course requirements refer to Section 31 10 00 – Site Clearing and Preparation.

- E. Tack Coat: Tack coat shall be applied to previously paved, hardened surfaces. Apply uniformly by mechanical means at a rate of 0.05 gal/s.y. after thoroughly cleaning such surfaces of all foreign matter and loose material. Surfaces shall be dry before the tack coat is placed. The tack coat shall be applied immediately prior to laying the new pavement.
- F. Placing Mix: Paving shall be laid in two courses except as noted on the Drawings. The thickness of each course shall be as shown on the Drawings and measured in place after compaction. The first course shall be the Binder Course and the second course shall be Top Course as defined in "Table A" of Section M3.11.03 "Job-Mix Formula" of the SSHB.
 - 1. Any unsatisfactory irregularities or defects remaining after the final compaction shall be corrected by removing and replacing with new material as specified, to form a true and even surface. All minor surface projections, joints and minor honeycombed surfaces shall be ironed out smoothly to grade, as directed.
 - 2. No vehicular traffic or loads shall be permitted on the newly completed pavement until stability has been attained and the material has cooled sufficiently to prevent distortion of loss of fines.
- G. Rolling: Begin rolling mixture when asphalt concrete can bear weight of roller without excessive displacement. Roll at least three times and provide a smooth, compact, uniform surface free of roller marks. After first rolling repair displaced area as needed with additional hot material. Roll at least two additional times to thoroughly compact concrete to maximum density and to remove roller marks.
- H. Tolerances: The finished surface of each hot-mixed asphalt course shall be tested for smoothness using a 10-foot straight edge applied parallel with and at right angles to the center line of the paved area. Surfaces exceeding the following tolerances within the 10-feet will not be accepted.

Binder Course: 1/4-inch	Top Course: 3/16-inch
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3.3 PATCHING EXISTING ASPHALT PAVEMENT

- A. In areas on site where new pavement abuts existing pavement and/or where existing pavement requires patching due to removal of existing pavement for installation of work under this Contract, patching of existing pavement shall be as follows:
 - 1. Sawcut the existing edge of pavement in a straight line at a 90-degree angle to the vertical in such a manner that all existing loose or cracked areas of pavement are removed.
 - 2. Edges of existing pavement shall be painted with a thin coat of bitumen (RS-1) immediately before placing new pavement.
 - 3. Asphalt shall be installed as specified herein. Smooth transition surfaces shall be provided where new pavement abuts existing paved surfaces.
 - 4. Joints shall be sealed and sanded immediately after new pavement installation.
- B. All asphalt patching work within public right-of-ways shall be completed in accordance with the requirements of the authority having jurisdiction.
 - 1. Provide traffic control for work within the public right-of-way.
 - 2. All road surfaces shall be cut by an approved mechanical means before any excavation is started to insure against unnecessary damage to pavement.

3. Excavation shall be completed in a safe and workmanlike manner and is to create a minimum amount of obstruction to pedestrian and or vehicular traffic.
4. Gravel Borrow shall be used and placed on six inch layers and compacted to 95% of the maximum dry density by mechanical means.
5. Resurfacing:
 - a. The work to be completed hereunder shall include the replacement of all existing bituminous pavements disturbed by the work. This shall include roadways, sidewalks, berms, driveways, parking lots and other paved areas encountered in the work.

Resurfacing will not be strictly limited to those areas disturbed, when in the judgment of the Architect an expansion of the work is necessary for proper restoration and to those areas specifically shown on the Drawings.
 - b. All work shall conform the requirements of the Massachusetts Highway Department SSHB, latest edition. Specific gradations of mix will be as directed by the Town Engineer or Architect to suit the use intended.
 - c. All cut joints at existing and new top pavement surfaces shall be sealed with bitumen and sand. This includes roadways, sidewalks, driveways, and all other pavements.

3.4 PAVEMENT MARKINGS

- A. Install painted pavement markings, as indicated on the Drawings. Clean surface to totally eliminate all loose material and dust. Apply paint in strict compliance with manufacturer's instructions and recommendations. Allow for proper curing of substrates before application of paints. Apply number of coats and dry film thickness as recommended by paint manufacturer. Apply paint with mechanical methods and templates to ensure uniform, straight lines and even line widths.
 1. Stenciled pavement markings shall be installed on pavements as shown on the plans.
 - b. Apply per paint manufacturer's recommendations.

3.5 CLEANING, REPAIR AND PROTECTION

- A. Three days after rolling, the finished pavement shall be tested. Any section that shows ponding, indentation, rutting or picking up shall be resurfaced at the Contractor's expense.
- B. Provide temporary protection to ensure work is completed without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protection and clean as necessary immediately before final acceptance review.

3.6 GUARANTEE

- A. The Contractor shall guarantee all pavement installations, including materials and workmanship, for a period of one year from the date of acceptance. The Contractor shall make interim repairs as necessary to maintain all paved areas in good, usable conditions.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING AND STAIRS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the owner or owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.

1.2 WORK INCLUDED

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install reinforced concrete pavement and stairs as indicated on the Drawings and as specified herein.
- B. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments within jurisdiction and coordinate all work under this Section, including but not limited to:
 - 1. Footings for site improvements, playground equipment footings
 - 2. Concrete pad
 - 3. Concrete curbing
 - 4. Concrete Landscape Stairs
- C. The following related items are included under the Sections listed below.
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 12 16 – Asphalt Paving
 - 6. Section 32 16 00 - Curbing
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 90 00 – Planting
 - 9. Section 32 91 00 – Loam and Planting Preparation
 - 10. Section 32 92 00 – Turf and Grasses
 - 11. Section 33 40 00 – Storm Drainage Utilities

1.3 SUBMITTALS

- A. Submit manufacturer's product data for the following:
 - 1. Preformed joint filler
 - 2. Sealants
 - 3. Concrete mix designs for footings and paving

- B. Mock ups: Samples shall not be constructed in an area of proposed finish work. Samples shall be constructed within the vicinity of the proposed finish work to facilitate comparisons during construction. The samples shall demonstrate the typical installation of concrete, including score lines, expansion joint and sealant, curing and finishing material, surface texture, and edge treatment. The accepted sample, upon approval, shall be maintained as the minimum standard of quality for approval of all new concrete pavement work required for the project. If the original sample panel is not approved, the Contractor shall provide additional sample panels, as required, at no additional cost to the Owner until an approved mockup sample is obtained. Unacceptable sample panels shall immediately be removed from the site.
1. Construct 4 foot x 4 foot sample panels of finished 4-inch thick concrete pavement, for approval, at least 15 days prior to final concrete paving work.

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Architect before request for acceptance and final payment for the work.
- C. All concrete walks shall conform to the applicable regulations of the Massachusetts Architectural Access Board and the Americans with Disabilities Act.
- D. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations in the Town of Andover and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.

1.5 DEFINITIONS

- A. The following related items are included herein and shall mean:
1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Transportation, latest edition
 2. A.S.T.M. - American Society for Testing and Materials
 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
 4. ACI – American Concrete Institute

1.6 SUBSURFACE INFORMATION

- A. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation and makes no representation regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.

1.7 FINISHED GRADES

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between

points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

1.8 GRADES AND ELEVATIONS

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make adjustments in grades and alignment as are found necessary to avoid interference and to adapt the grading to special conditions encountered.

1.9 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the municipality, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

1.10 QUALITY ASSURANCES

- A. Unless otherwise specified, work and materials for construction of the reinforced Portland cement concrete paving shall conform to referenced ACI specifications including, but not limited to 301, 309R, 310, 316R, and applicable portions MassDOT Specifications Section 476 Cement Concrete Pavement. In the event of a discrepancy between these specifications and referenced standards, the most restrictive shall apply.
- B. Paving work and base course installation shall be done only after excavation and construction work which might damage them have been completed. Damage caused during construction shall be repaired before acceptance.
- D. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced under this Section. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work installed under this Contract.
- E. Pavement, base, or subbase shall not be placed on a muddy or frozen subgrade.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

- A. Base course shall be specified, provided, installed and paid for under 31 23 00 Excavation Filling and Grading Specification Section.

2.2 FORM MATERIALS

- A. Unless otherwise indicated, construct form work for concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight,

CONCRETE PAVING AND STAIRS

smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints and to conform to the joint system shown on Drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

- B. Controlled permeability formliner shall be a two-layer non-woven polypropylene fabric. Formliner shall be Formtex CPF Liner as manufactured by Fibertex Nonwovens, or approved equal.
- C. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

2.3 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 60.
- B. Welded Wire Fabric (WWF): ASTM A185, welded steel wire fabric. Fabric reinforcement shall be furnished in flat sheets.
 - 1. Provide 6 inches x 6 inches W1.4 x W1.4 WWM for 4 inch thick concrete pavement.
 - 2. Provided 6 inches x 6 inches W2.9 x W2.9 WWM for 6 inch thick concrete pavement.
 - 3. Welded wire fabric support chairs shall be plastic supports that flex during concrete pours and gradually restore to original shape. Support chairs shall be Mesh-Ups distributed by www.globalindustrial.com 888-978-7759, or Architect approved equal.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.
- E. Steel expansion dowels shall be hot-rolled plain steel rounds conforming to the requirements of AASHTO M31, Grade 60 and consisting of a one-half inch by twenty-four inches (1/2"x24") smooth steel dowel and compatible waxed tube sleeve, twelve inches (12") in length. Dowels and sleeves shall be as furnished by A.H. Harris & Sons, Inc., by U.S. Steel Corp., by Edgcombe Steel Corp., or approved equal. Dowels shall be epoxy coated.

2.4 PORTLAND CEMENT CONCRETE

- A. Cast-in-place concrete shall be air-entrained concrete with a minimum 28-day compressive strength of 5,000 pounds per square inch. For below grade elements, minimum 28-day compressive strength of 5,000 pounds per square inch. Concrete shall be air-entrained 7% minimum, +/- 1% by volume. Concrete slump shall have a slump of 3 inches to 5 inches. Maximum aggregate size shall be 3/4 inch. Thickness of concrete shall be as noted on the Contract Documents.
- B. Cement shall be stored in a weather-tight structure and in such a manner as to prevent deterioration or intrusion of foreign matter. It shall be easily accessible for proper inspection and identification of each shipment. Cement that has hardened or partially set shall not be used.

2.5 CURING COMPOUNDS

- A. All curing compounds shall conform to requirements of ASTM Designation C-309, Type I, clear and C-156. No materials containing wax or saponifiable materials will be permitted.
- B. Curing compound in areas that will be exposed to view in the finished work, or to receive a painted finish, and areas to receive a concrete topping or ceramic tile mortar beds, seamless composition flooring, synthetic athletic surfacing, or other similar finishes, shall contain a fugitive dye, and shall

be of a type that will become brittle and easily removable after about 3 weeks to allow dust-proofing treatment specified here in after.

- C. Curing compound shall be Master Builders "Master Seal", Symons "Cure and Seal", Sonneborn "Kure-N-Seal", "CS-309" by W.R. Meadows or equal, conforming to ASTM 309, Type 1 and 2.

2.6 EXPANSION JOINTS

- A. Provide expansion joints, unless otherwise indicated on the Contract Documents, at 30 feet on-center, maximum.
- B. Expansion Joint Filler:
 - 1. Expansion joint filler between pours of concrete paving shall have a removable cap cover for the joint filler with integral permanent plastic bond breaker such as Snap-Cap from Seal Tight manufactured by W.R. Meadows, Inc., or approved equal. Cover width shall be sized to match width of joint filler. D.
 - 2. Expansion joint filler at fixed objects shall be closed cell polymer foam meeting requirements of ASTM D1752, Sections 3.1 to 3.4, based on compression requirement of 10 psi minimum and 25 psi maximum. Recovery rate following 50-percent compression shall exceed 99-percent recovery, per ASTM D545. Foam shall be Ceramar foam filler manufactured by W.R. Meadows Co. or an approved equal. Joint sealant shall color match concrete refer to section 03300 for joint sealant requirements.
- C. Expansion Dowels: refer to Reinforcing Materials in this Section

2.7 JOINT SEALANT

- A. Joint sealant and primer shall be polyurethane-based, one component, elastomeric sealants, complying with Fed. Spec. TT-S-00230C, Class A Type 1. Color to match concrete. Sealants shall be self-leveling pour grade type.
 - 1. Vulkem 45, as manufactured by Mameko International, 4475 East 175th Street, Cleveland Ohio 44182, (800) 321-6412.
 - 2. Urexpan NR-210, as manufactured by Pecora Corporation, 165 Wambold Road, Harleysville, PA 10348, (215) 723-6051
 - 3. PSI 951, as manufactured by Polymeric Systems Inc., Phoenixville, PA, (800) 228-5548.
- B. Provide only materials which are known to be fully compatible with the actual installation condition, as shown by the manufacturer's published data or certification. Use manufacturer's recommended joint primer.

2.8 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by the Landscape Architect.
- C. Adjustments to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

2.9 CONCRETE MIX

- A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd. or fraction thereof.
- B. Provide batch ticket for each batch discharged and use in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
- C. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
- D. Delete reference for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.
- E. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- F. When air temperature is between 85 Deg. F (30 deg. C) and 90 Deg. F (32 deg. C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 Deg. F. (32 deg. C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 PREPARATION OF SUBGRADE

- A. Areas to be paved shall be compacted and brought to subgrade elevation and all work specified, performed and paid under Earth Moving Specification Section. Prepared subgrade will be inspected by the Owner's Representative. Contractor shall arrange to have the Owner's Representative visit the site to inspect and approve subgrade.

3.2 AGGREGATE BASE COURSE

- A. Base course shall be specified, provided, installed and paid for under 31 23 00 Excavation Filling and Grading Specification Section.

3.3 FORMWORK

- A. Forms shall conform to the lines, dimensions and shapes of concrete shown providing for openings, recesses, keys, slots, beam pockets and projections as required.
- B. Make forms clean and free of foreign material before placing concrete.
- C. Form liners shall be applied to all exposed vertical concrete surfaces and shall be secured in place on vertical or inclined surfaces by tension, taught against the forms so that the surface is smooth

with no creases or loose material. Stapling or other fixing devices may be used after the liners have been tensioned. Form release agents shall not be used on vertical concrete surfaces.

D. Do not use earth cuts as forms for vertical surfaces, unless approved by the Architect.

E. Design of Formwork

1. Comply with ACI 301, Chapter 4, Paragraph 4.2. Formwork drawings shall bear the seal of licensed professional engineer.
2. Form rods and tie wires of exterior surfaces shall slope down from the inside to outside of forms.
3. Provide forms so that no discernible imperfection is in evidence in finished concrete surfaces due to deformation, bulging, jointing, or leakage of forms.

3.4 REINFORCEMENT MATERIAL

- A. Steel reinforcing shall be thoroughly cleaned of all foreign material which may reduce the bond between the concrete and reinforcing.
- B. Welded wire mesh shall be placed midway within the depth with plastic Mesh-Ups support chairs specified herein in accordance with the manufacturer's recommendations. Mesh shall be parallel to the finished concrete pavement surface. Do not pour concrete over top of reinforcement unless it is supported underneath. Where mesh reinforcement is spliced, it shall be lapped at least 12 inches.
- C. Reinforcing steel anchors shall be securely wired in the exact position called for, and shall be maintained in that position until concrete is placed.
- D. Unless otherwise indicated on the Contract Documents, reinforcing shall extend within 2 inches of formwork and expansion joints.

3.5 EXPANSION JOINTS

- A. Expansion joints shall be as located on the Contract Documents. Expansion joint shall be formed in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab.
 1. For concrete pavements, depth of joint filler shall be as required to form a 3/4 -inch deep sealant recess below finished concrete surface.
- B. Provide expansion joints as indicated on the Contract Documents. Unless otherwise indicated on the Contract Documents, expansion joints shall be located at 20 feet vertically on-center maximum for walls and 30 feet maximum for pavements.
 1. Expansion joints shall be placed where pavement meets flush foundations and footings, concrete vertical curb or other vertical structures, including light bases, hydrants, walls, buildings, piers and walls, and at other conditions as shown on the Contract Documents.
 2. Contractor shall request the presence of the Owner's Representative to review the layout of expansion joints prior to pouring the concrete.
 3. Follow the manufacturer's application recommendations for joint filler and sealer.
 4. Joint alignment shall be straight and true.

- C. Where the expansion dowel system is used in the expansion joints, steel plates and pocket former sleeves shall be set parallel with the top and bottom surfaces of the concrete slab and installed according to the manufacturer's installation instructions.

3.6 PORTLAND CEMENT CONCRETE

A. Ready Mix Concrete

1. Comply with ASTM C94.
2. Add mixing water only at the site.
3. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time limit so that no stiffening of the concrete shall occur until after it has been placed.
4. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.

B. Placing Concrete

1. Preparation before placing: Conform to ACI 310, Chapter 8, Paragraph 8.1.
2. Conveying
 - a. Comply with ACI 301, Chapter 8, Paragraph 8.2.
 - b. Provide a spout or downpipe and elephant trunk or other appropriate method to prevent concrete from falling freely through a height greater than 3 feet.
4. Depositing: Comply with ACI 301, Chapter 8, Paragraph 8.3.
5. Consolidating: Comply with ACI 309R, "Recommended Practice for Consolidation of Concrete". All concrete shall be vibrated. Maintain at least one vibrator as a stand-by.

C. Curing

1. It is essential that concrete be kept continuously damp from time of placement until end of specified curing period. It is equally essential that water not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.
2. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.
 - a. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

- b. If concrete is cured with a curing compound, compound shall be applied at a rate of 200 square feet per gallon, in two applications perpendicular to each other.
- c. Curing period shall be seven days minimum.

D. Form Removal

- 1. Do not remove forms until the concrete has thoroughly hardened and has attained sufficient strength to support its own weight and construction live loads to be placed thereon, without damage to the structure. In general, do not disturb forms for framing until the concrete has attained at least 40% of design strength for side forms and 80% of design strength for bottom forms. Remove no forms for 24 hours after placing concrete. Protect concrete walks from pedestrian traffic for a period of 3 days after placing. Damp cure as per standards above. Be responsible for proper form removal and replace any work damage due to inadequate maintenance or improper or premature form removal.
- 2. Where use of metal form ties extending to within less than 1-1/2 in. of the face of permanently exposed concrete has been unavoidable, cut off such ties at least 1-1/2 in. deep in the concrete but not less than 72 hours after concrete has been cast. Remove forms by methods which will not spall the concrete or cause any injury whatsoever. Hammering or prying against concrete will not be permitted.

3.7 FIELD QUALITY CONTROL

- A. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Landscape Architect.
- B. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
- C. Slump: ASTM C143, one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; one for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 deg. F (4 deg. C) and below, and when 80 deg. F (27 deg. C) and above; and each time a set of compression test specimens made.
- F. Compression Test Specimen: ASTM C31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
- G. Compressive Strength Tests: ASTM C39; one set for each 100 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 5,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
- H. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- I. Strength level of concrete will be considered satisfactory if average of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.

- J. Test results will be reported in writing to Architect and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day test.
- K. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

3.8 FINISHING

- A. General Requirements for Flatwork: Strike off top surfaces of finished fill and monolithic slabs true and level within a tolerance of 1/8 in. in 10 ft. and measured with a 10 ft. straightedge placed in any direction at any location. Set edge forms and intermediate screed strips accurately and sufficiently rigid to support screeds and so that proper surface elevations and concrete thickness are achieved allowing for dead load deflection and camber of formwork. Take measurements and control tolerances by the use of transit instrument. Upon completion of leveling, remove screed and fill spaces with concrete. Concrete shall have a medium broom finish of parallel marks. Brooming shall be at right angles to the axis of walk or as shown on the Drawings.

Concrete surfaces for sub-base at unit pavement shall be woodfloated with a slightly rough surface, and finished true to line and grade per the Contract Documents.

- B. Control Joints shall be saw cut joints, sawn by using a diamond blade concrete power saw. Joint shall be made after concrete has completely cured and reached the required strength. Saw joints shall be straight and true to the Contract Documents.

- 1. Saw shall cut into slab at least 25 percent of slab depth.

3.9 PROTECTION OF CONCRETE SURFACES

- A. Protection of Concrete: Under no circumstances shall the Contractor pour and leave the fresh concrete open to vandalism, while it is setting up. Damaged concrete shall be subject to rejection by the Landscape Architect.

3.10 ACCEPTANCE STANDARDS

- A. The following acceptance standards shall be applied to this Contract. Any portion of the concrete paving that does not meet required acceptance standards shall be removed at the direction of the Owner's Representative. Saw cut pavement at nearest adjacent tooled joint, remove concrete pavement and discard off site in a legal manner and replace with new concrete pavement meeting the requirements of this Section.

- 1. Pavement surfaces shall be free of all cracking.
 - 2. Pavement surfaces shall not pond water.
 - 3. Pavement surfaces shall be free of visible high and low spots.
 - 4. Steel mesh reinforcing shall not penetrate the surfaces or sides of the concrete pour.
 - 5. Sawcut joints and all expansion joints shall be straight, true, uniform in width and free from twists, bends, kinks and misalignments.
 - 6. Edges and the associated edging patterns shall be consistent, true, crisp and complete.

7. Pavement shall show no graffiti. Pavement shall show no rubbed surfaces indicative of attempts to erase graffiti.
8. Expansion joints and score joints shall be placed as required by the Contract Documents.
9. Concrete surfaces shall be free of all stains, including those created during the course of the construction by the Contractor, caused by natural events, or caused by vandalism.
10. All sawcut joints and expansion joints shall be flush.
11. Pours different in color as determined by the Owner's Representative.
12. Pours without expansion joints cast into them.
13. Pours not conforming to the Contract Documents.
14. All forms shall be removed from the site.
15. Exposed wall surfaces shall be free of surface voids and projections.

END OF SECTION

SECTION 321600
CURBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section includes, but is not limited to the following:
 - 1. Vertical Granite Curb
 - 2. Flush Cast-in-Place Concrete Curb

1.03 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 024113 – Site Preparation
 - 2. Section 033000 – Cast-in-Place Concrete
 - 3. Section 311000 – Site Clearing
 - 4. Section 312000 - Earthwork
 - 5. Section 321200 - Asphalt Paving
 - 6. Section 321313 – Concrete Pavements
 - 7. Section 323000 - Site Improvements
 - 8. Section 329100 – Loam and Planting Preparation
 - 9. Section 334000 - Storm Drainage Utilities

1.04 INTENT

- A. The intent of the work of this Section is to provide curbing which complies with Commonwealth of Massachusetts, Department of Transportation, "Standard Specifications for Highways and Bridges," (hereinafter referred to as SSHB) Section 500, "Curb and Edging".
- B. Department of Public Works: All work within any public way and all work affecting any public way, including without limitation, roadways, sidewalks, curbs, and other work shall be done in strict compliance with the requirements of the authority having jurisdiction including local and State Standard Specifications, except when Standard Specifications are in conflict with these specifications, the most restrictive and inclusive requirements shall govern.

1.05 SUBMITTALS

- A. Shop Drawings: The name of the Contractor shall be shown on the shop drawings. Finished work shall conform to approved samples and shop drawings.
 - 1. Provide large scale, detailed and complete shop drawings/placement drawings for both granite and precast concrete curbing showing all curbing work including all dimensions, radii, tapered radial curb for accessible curb cuts, tapered curb with lengths clearly

indicated and transitions curbs for approval.

2. Provide an itemized schedule of all curb pieces. Curbing shall be individually listed by type with radius and straight pieces noted with their lengths. Tapered, transition and corner curbs shall be individually listed.

- B. Product Data: Submit manufacturers' certifications stating that materials comply with requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products adequately protected against damage. Handle in strict compliance with manufacturer's instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to, chipping, staining, cracking and other damage. Cracked, chipped, or stained units will be rejected and shall not be utilized in this work. Sequence deliveries to avoid delays, but minimize on-site storage.

1.07 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting or affected by the work of this Section, including paving work to be done by others, as necessary to assure the steady progress of the Work.

PART 2 - PRODUCTS

2.01 GRANITE CURB

- A. Granite shall be "New England" structural granite conforming to ASTM C 615, Class I Engineering Grade, suitable for curbstone use.
 1. Curb shall be new, light gray, of a smooth splitting appearance free from seams and other imperfections which impair structural integrity, and with material degradation than 32 percent, as determined by ASTM C 131.
- B. Vertical Granite Curb: Furnish vertical granite curbing, type VA-4 as described in Section M9.04.0 and M9.04.1 of the Massachusetts Department of Transportation SSHB. The top surface shall be sawn to a true plane, and shall have no projections or depressions greater than 1/8 inch. The front and back arris lines shall be pitched straight and true and there shall be no projections on the back surface for 3 inches down from the top that would exceed a batter of 4" per foot. The front surface shall be at right angles to the planes of the top and ends and shall be smooth quarry split, free from drill holes. Minimum length shall be 6 feet unless otherwise shown on the Drawings.
 1. Radial type VA-4 curb shall be used on all curves with a radius of 100 feet or less, where vertical granite curb is called for on the Drawings.
- C. Vertical to Flush Transition Curb: Furnish vertical to flush transition curbs of same material as adjacent curb where shown on the drawings, to taper the reveal of the curb from 6 inches to 0 inches. Transition curb along a curve shall be of the same radius. The curb shall be manufactured for the purpose intended at the plant and shall not be field cut.

2.02 MORTAR

- A. Cement mortar shall conform to Section M4.02.15 of the Massachusetts Department of Transportation SSHB.
- B. Concrete for curb setting shall have a minimum 3,000 PSI compressive strength at 28 days.

2.03 FLUSH CAST-IN-PACE CONCRETE CURB

- A. Concrete for Cast-in-Place Concrete Curb shall have a 28-day compressive strength of at least 4,000 pounds per square inch. Higher minimum compressive strength indicated in the drawings and/or specifications for individual improvements shall govern see section 32 13 13 Exterior Concrete.
- B. Fiber reinforcing shall be Matrix Fibrillated Fibers by FRC Industries of Freeport, FL 888-783-2517. Alternative approved manufacturers include:
 - 1. Sika Corporation, New Jersey, 201-933-8800
 - 2. Cemex, Alabama, 205-841-4711
- C. MATRIX fibrillated fibers are manufactured from 100% homopolymer, virgin polypropylene resin, containing no reprocessed olefin materials, and in compliance with ASTM C-1116-97 "Standard specification for fiber-reinforced concrete and shotcrete." FRC Fibers are specifically engineered for use in concrete as secondary reinforcement, and for the purpose of controlling plastic shrinkage and settlement cracking. FRC Fibers comply with requirements as defined in the 1997 Uniform Building Code – ICBO, and in the National Building Code – SBCCI.
- D. Provide smooth broom finish at all exposed concrete curbing.
- E. Fence posts shall be embedded directly within curb as indicated on the Drawings. Fence posts surfaces shall remain free and clear of dirt and debris as well as remain free of damage as a result of the concrete work.
- F. Sawn control joints at a maximum 20 feet spacing or as indicated in the Drawings shall be perpendicular to concrete curb and penetrate 1 inches minimum into edger. Care should be taken to avoid chipping or damage to concrete curb.

2.04 CONCRETE

- A. Concrete for curb setting shall be 4,000 PSI as specified in Section 32 13 13 – Concrete.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All granite curbing shall be installed after the installation of the Binder Course and prior to installation of the Top Course. Curb shall be set to the line and grade required and shall project six inches above finished grade elevations where not otherwise shown as flush or as a transition.
- B. Preinstallation Examination Required: The installer shall examine previous related work, and conditions under which this work is to be performed and notify Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means installer accepts substrates, previous work, and conditions.
- C. Manufacturer's Instructions: Strictly comply with Mass. S.S.H.B. including Section 500 of the latest edition for the installation of specified curb, unless these specifications are more restrictive. In such cases these specifications will prevail.
- D. Trench Preparation: Curb shall be set in a trench excavated to a width of 20 inches. The bottom of the trench shall be 6 inches deeper than the depth of the curbstone. The subgrade shall then be filled to proper levels with a minimum of 6 inches of compacted gravel borrow at the lines and grade shown on the plan to provide continuous support to the bottom of curb. Gravel borrow shall be thoroughly rammed or tamped until firm and unyielding.
- E. Granite Curb Installation: Set curbs true to line and grade with vertical exposed curb faces plumb and with curb top surface parallel to adjacent surfaces. The maximum space between joints in the top and face of curb down 8 inches from the top shall not be more than 1/4 inch.

The arris formed by the intersection of the plane of the joint with the planes of the top and exposed faces shall have no variation from the plane of the top and exposed faces greater than 1/4 inches. Place concrete continuously along the front and back of the curb as indicated on the Detail. The curbing contractor shall confirm true vertical and horizontal alignment immediately after setting concrete and adjust curb sections as necessary to provide a true line.

- F. Pointing Joints in Granite Curb: The joints between curbstones (both front and back) shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. Prior to installing adjacent finish surface improvements. After pointing, the curbstones or edging shall be satisfactorily cleaned to remove all excess mortar from the exposed curb surfaces.
- G. Tolerances: The following installed tolerances are allowable variations from locations and dimensions indicated by the Contract Documents and shall not be added to allowable tolerances indicated for other work.
 - 1. Allowable Variation from True Plumb: 1/8-inch over exposed face.
 - 2. Allowable Variation from True Line: =1/4-inch in 20-feet.

H. Refer to Section 32 13 13 Concrete for installation of Flush CIP Concrete Curb.

3.02 REPAIR, CLEANING AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Clean exposed surfaces using non-abrasive materials and recommended methods. Remove and replace damaged or unsuitable work that cannot be successfully cleaned or repaired.
- B. Provide temporary protection to ensure work is without damage or deterioration at time of final acceptance. Remove protections and re-clean as necessary immediately before final acceptance.
- C. After completion of the work in this Section, the Contractor shall remove all debris, materials, rubbish, etc. from the site and legally dispose of them. New or existing improvements that have been damaged in the work under this Contract shall be repaired to the satisfaction of the Architect.

END OF SECTION

**SECTION 32 18 16.13
PLAYGROUND PROTECTIVE SURFACING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
1. Grading and Compacting of Subbase
 2. Poured-in-Place (PIP) Rubber Safety Surfacing
 3. Alternate #1 – Skim coat PIP rubber surfacing on porous asphalt.
 4. Cleaning, Repair and Protection

1.3 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
- B. The following related items are included under the Sections list below:
1. Section 01 23 00 - Alternates
 2. Section 11 68 00 – Playground Equipment
 3. Section 12 93 00 – Site Furnishings
 4. Section 31 10 00 – Site Clearing and Preparation
 5. Section 31 23 00 – Excavation Filling and Grading
 6. Section 32 12 16 – Asphalt Paving
 7. Section 32 13 13 – Concrete
 8. Section 32 18 17 - Engineered Wood Fiber Surfacing
 9. Section 32 91 00 – Loam and Planting Preparation
 10. Section 32 92 00 – Turf and Grasses
 11. Section 33 40 00 – Storm Drainage Utilities
- C. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.4 REFERENCES

- A. The following related items are included herein and shall mean:
1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 2. A.S.T.M. - American Society for Testing and Materials.

B. American Society of Testing and Materials (ASTM)

1. 355 Shock Absorbing Properties of Playing Surface Systems and Materials (GMAX)
2. F1292 Impact Attenuation of Surface Systems Under and Around Playground Equipment
3. F1951 Determination of Accessibility of Surface Systems Under and Around Playground Equipment

1.5 SUBMITTALS

A. Submit Poured-in-Place Rubber manufacturer's Product Literature including IPEMA certification, Specification Data and installation instructions.

1. Provide 2 color samples for each specified color combination identified on the drawings, 12" x 12" square, up to 11 samples (Ratio of 11 12" x 12" squares specified below, to be provided to Owner/Landscape Architect. The final color samples and ratios for each zone to be specified by Landscape Architect during selection process
2. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951.
3. Provide Manufacturer's Warranty for Owner's acceptance.
4. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951. Submit evidence of IPEMA (International Playground Equipment Manufacturer's Association) certification.

B. Submit installer qualifications (Manufacturer-certified installer of system).

1. Installers of the rubber safety surface system shall have five (5) years experience, minimum, and shall provide three (3) local references where installation can be inspected.

C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.7 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.

- C. Substrates: Proceed with work only when substrate construction and penetrating work is complete. Maintain the sub-base in satisfactory condition and properly drained until surface improvement is placed.

1.8 GUARANTEE

- A. The Contractor shall deliver standard written manufacturer's guarantee in the Owner's name covering all materials and workmanship. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

1.9 QUALITY ASSURANCE:

- A. Surface Installer Qualifications: Company specializing in outdoor resilient surfaces in the USA and certified members of NPCAI. The applicator shall be approved and trained, with a minimum of five years' documented experience and have completed 5 public playgrounds in the past 5 years. Conditions of all surface substrates with respect to structural performance shall be evaluated and approved by the surface installer prior to application of surface system.
- B. Performance requirements
 - 1. All safety surfacing within playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F 1292 and IPEMA certified for the highest playing point of each piece of play equipment.
 - 2. Surfaces intended to serve as accessible routes of travel shall be firm, stable and slip resistant and shall be meet the requirements of ASTM F 1951 and ASTM F 1292
- C. Post-installation testing
 - 1. Impact attenuation testing shall be performed by a National Recreation and Parks Association/National Playground Safety Institute (NRPA/NPSI) Certified Playground Safety Inspector (CPSI) and trained in the proper operation of the Triax test equipment.
 - 2. Impact attenuation testing shall be performed according to ASTM 1292 in presence of the owner within 30 days of installation. As a precondition of surfacing acceptance, the Contractor shall provide the testing results in writing. Up to 10 drop test locations will be required at each separate play area.
 - 3. If the surfacing does not meet the safety standards or impact attenuation performance requirements, the contractor will be required to bring the surfacing up to compliance within 30 days or less. The extent of failure and determination of replacement will be at the discretion of the Owner. Should they be found during or after installation, any violations of the C.P.S.C. Guidelines, ASTM, ADA or impact attenuation performance requirements shall be corrected to the satisfaction of the owner, Any proposed corrective work shall be reviewed and approved by the Landscape Architect before corrective work begins.
 - 4. Impact attenuation requirements: Gmax test scores shall be less than 150 and HIC scores shall be less than 850 or current ASTM 1292 standard, whichever is more strict.

PART 2 - PRODUCTS

2.1 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 23 00 – EXCAVATION FILLING AND GRADING to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 23 00 – EXCAVATION FILLING AND GRADING. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.2 POURED-IN-PLACE RUBBER SAFETY SURFACING AND ALTERNATE #1

- A. Furnish and install Poured-in-Place Rubber Safety Surface complete with gravel base, asphalt binder, sub drainage and concrete edging per the Contract Documents.
- B. To establish a standard of quality, design, and functionality desired, Drawings and Specifications have been based on the material "Playbound" 2-layer poured-in-place by Surface America, www.surfaceamerica.com, PO Box 157, Williamsville, NY 14231; Telephone: (800) 999-0555, Fax: (716) 632-8324 or Architect approved equal. Rep Contact: John McConkey (john.mcconkey@obrienandsons.com)
 - 1. Primer shall be as per manufacturer's system, and recommended by manufacturer.
 - 2. Cushion Course: blend of 100% recycled SBR (Styrene Butadiene Rubber) and aromatic polyurethane binder. Cushion Course thickness per the Contract Documents, and final poured-in-place surfacing depth shall be in accordance with fall height CPSC safety requirements. Required mix proportions by weight: as ratio 14% urethane divided by 86% rubber
 - 3. Top Surface; thickness shall be per the Contract Documents. Required mix proportions by weight: as ratio 18% urethane divided by 82% rubber.
 - 5. There will be three colors used for the rubber surfacing. All three colors shall use EPDM (Ethylene Propylene Diene Monomer) granules with "aliphatic" polyurethane. The exact colors shall be selected from a total of 6 2x2 bound samples with color ratios specified by the Landscape architect during the submittal process.
 - 1. Color A (Off-White) - 70% Pearl, 20% Light Grey, 10% Black.
 - 1. Note: The above color shall also be used as a skim coat color on porous asphalt.
 - 2. Color B (Blue) – No Black in color mix. Color ratio to be specified during submittal process.
 - 3. Color C (Purple) - No Black in color mix. Color ration to be specified during submittal process.
 - 6.. Other approved manufacturers include:

- a. Playsites and Surfaces, 908 Long Island Ave, Deer Park, NY 11729 tel 631-392-0960
- b. Duraturf by Sports surface specialties, East Aurora, NY 14052 locally represented by Premier Park and Play, contact Doug Knotts 617-244-3317
- C. Loose color samples shall be submitted by the contractor, and approved by Architect. Upon approval, bound color mockups in specified ratios shall be provided for Landscape Architect for final selection. Solar Reflectance values shall be provided for each sample
- D. Materials shall not contain hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.
- E. The finished surface shall be slip-resistant; supply ASTM-E-303 slip characteristic test results.
- F. Material shall be ignition-resistant; supply passing ASTM-D 2859 test results.
- G. Material shall be water-permeable, and wear and weather-resistant. Sealants shall be low odor and non-yellowing.

PART 3 - EXECUTION

3.1 SUBBASE, EDGER AND DRAINAGE

- A. Install edger system in accordance with the drawings and per the manufacturer's recommendations. Install the underdrainage as indicated on the Drawings. Install gravel base where indicated on the drawings and in accordance with Section 31 23 00 – EXCAVATION FILLING AND GRADING. Install asphalt binder base where indicated on the drawings and in accordance with Section 32 12 16 – ASPHALT PAVING.

3.2 POURED-IN-PLACE RUBBER SAFETY SURFACE AND ALTERNATE #1

- A. Installation shall be as recommended by the manufacturer and shall be to the depths and widths indicated on the drawings.
- B. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, concrete edge restraints, playground equipment installation and other relevant work has been completed.
- C. Poured in place surfacing must be installed on a dry subsurface with no prospect of rain within the initial drying period and within recommended temperature range (40 degree Fahrenheit and rising) of the manufacturer.
- D. The contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines. Per CPSC and ASTM F-1292 Critical Height testing procedures at 30, 72, and 120 degrees F, the installed surface shall pass the 150 G-max and 850 HIC test for a height at least equal to the highest fall height of equipment as installed within its zone.
- B. When installed, the system shall be handicapped-accessible and comply with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA). Surface must comply with Massachusetts Architectural Access Board accessibility requirements and ASTM F1951.

- C. Contractor shall provide a written five (5) year performance guarantee from date of substantial completion. The manufacturer shall provide a written guarantee for three (3) years from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.
- D. Install material per manufacturer's specifications.

3.3 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 18 17
ENGINEERED WOOD FIBER SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Grading and Compacting of Subbase
 - 2. Engineered Wood Fiber (EWF) Surfacing
 - 3. Alternate #2 – EWF Surfacing and Edging for the spinner by Kompan.
 - 4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 03 30 00 – Site Cast-In-Place Concrete
 - 2. Section 11 68 00 – Playground Equipment
 - 3. Section 32 10 00 – Asphalt Paving
 - 4. Section 32 16 00 - Curbing
 - 5. Section 32 18 16 – Playground Protective Surfacing
 - 6. Section 33 41 00 – Storm Drainage Utilities
- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.04 REFERENCES

- A. The following related items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials.
- B. American Society of Testing and Materials (ASTM)
 - 1. 355 Shock Absorbing Properties of Playing Surface Systems and Materials (GMAX)

2. F1292 Impact Attenuation of Surface Systems Under and Around Playground Equipment
3. F1951 Determination of Accessibility of Surface Systems Under and Around Playground Equipment

1.05 SUBMITTALS

- A. Submit Engineered Wood Fiber Surfacing and Rubber Kick Mat manufacturer's Product Literature including IPEMA certification, Specification Data and installation instructions.
 1. Provide one (1) sample for each product to Owner/Landscape Architect for approval.
 2. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951.
 3. Provide Manufacturer's Warranty for Owner's acceptance.
 4. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951. Submit evidence of IPEMA (International Playground Equipment Manufacturer's Association) certification.
- B. Submit installer qualifications (Manufacturer-certified installer of system).
 1. Installers of the wood fiber and rubber mat system shall have five (5) years minimum experience and shall provide three (3) local references where installation can be inspected.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.07 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.
- C. Substrates: Proceed with work only when substrate construction and penetrating work is complete. Maintain the sub-base in satisfactory condition and properly drained until surface improvement is placed.

1.08 GUARANTEE

- A. The Contractor shall deliver standard written manufacturer's guarantee in the Owner's name covering all materials and workmanship. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

1.09 QUALITY ASSURANCE:

- A. Surface Installer Qualifications: Company specializing in outdoor resilient surfaces in the USA and certified members of NPCAI. The applicator shall be approved and trained, with a minimum of five years' documented experience and have completed 5 public playgrounds in the past 5 years. Conditions of all surface substrates with respect to structural performance shall be evaluated and approved by the surface installer prior to application of surface system.

B. Performance requirements

1. All safety surfacing within playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F 1292 and IPEMA certified for the highest playing point of each piece of play equipment.
2. Surfaces intended to serve as accessible routes of travel shall be firm, stable and slip resistant and shall be meet the requirements of ASTM F 1951 and ASTM F 1292

C. Post-installation testing

1. Impact attenuation testing shall be performed by a National Recreation and Parks Association/National Playground Safety Institute (NRPA/NPSI) Certified Playground Safety Inspector (CPSI) and trained in the proper operation of the Triax test equipment.
2. Impact attenuation testing shall be performed according to ASTM 1292 in presence of the owner within 30 days of installation. As a precondition of surfacing acceptance, the Contractor shall provide the testing results in writing. Up to 10 drop test locations will be required at each separate play area.
3. If the surfacing does not meet the safety standards or impact attenuation performance requirements, the contractor will be required to bring the surfacing up to compliance within 30 days or less. The extent of failure and determination of replacement will be at the discretion of the Owner. Should they be found during or after installation, any violations of the C.P.S.C. Guidelines, ASTM, ADA or impact attenuation performance requirements shall be corrected to the satisfaction of the owner, any proposed corrective work shall be reviewed and approved by the Landscape Architect before corrective work begins.
4. Impact attenuation requirements: **Gmax test results shall be less than 150 and HIC test results shall be less than 850.**

- 1) Please refer to the falling fall height zones for safety surfacing minimum depth. Actual depths shall be adjusted (thickened) as needed by contractor to accommodate the final Gmax and HIC requirements.

FALL HEIGHT	
PIP DEPTH	FALL HEIGHT
2.5"	4'
3"	5'
3.5"	6'
3.5"	7'
4"	8'
4.5"	9'
5"	10'
6"	12'

PART 2 - PRODUCTS

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 00 00 - EARTHWORK to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-grade infiltration rates shall be confirmed with in-place testing. A minimum of one test at each playground surfacing type shall be conducted. Tested infiltration rates shall be meet or exceed a minimum of five inches per hour (5"/hr). If infiltration rates fail to meet the minimum, remediation of the sub-grade material shall be required to bring the sub-grade infiltration rates into compliance or an under-drainage shall be installed.
- C. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 00 00 - EARTHWORK. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.02 ENGINEERED WOOD FIBER SURFACING AND ALTERNATE #2

- A. Furnish and install Engineered Wood Fiber Surfacing as indicated in the drawings and specified herein.
- B. Material shall be IPEMA certified and consist only of recently harvested North American hardwoods including Oak, Maple, Ash, Poplar, Hickory, Beech, Birch and Locust. All woods

- shall have been debarked and shall be free of soil, leaves, twig material and other contaminants which hasten decomposition. The moisture content shall be between 25% and 55% by weight. No chemical treatment or additives are allowed. Positively no recycled wood from pallets or waste wood is permitted due to the possibility of contamination and the risk of poor surface stability.
- C. The density of the material shall be from 18 lbs. per cubic foot to 23 lbs. per cubic foot. Wood fiber surfacing shall be randomly sized, approximately ten times longer than wide. The material shall meet the gradation requirements of ASTM C136.
 - D. Hardwood fiber must meet or exceed C.P.S.C., A.D.A., C.S.A., ASTM F-1292-99, and ASTM F-1951 guidelines.
 - E. Wood fiber must be wheelchair accessible as required by the Americans With Disabilities Act and have been tested to the guidelines of ASTM PS-83 or ASTM F-1951 for accessibility
 - F. Provide sufficient amount of material to allow for compaction to depths indicated on the plans/details and as per manufacturer's recommendations.
 - G. Filter fabric shall be provided that is 100% polyester, nonwoven, engineering geotextile fabric, Mirafi 140N or equal. Provide 12" overlap on all seams
 - H. Filter fabric shall be provided that is 100% polyester, nonwoven, engineering geotextile fabric, Mirafi 140N or equal. Provide 12" overlap on all seams

PART 3 - EXECUTION

3.01 SUBBASE

- A. Prepare the subgrade in accordance with the drawings and per the manufacturer's recommendations.

3.02 ENGINEERED WOOD FIBER SURFACING AND ALTERNATE #2

- A. Installation shall be as recommended by the manufacturer and shall be to the widths indicated on the drawings. Fiber depths shall be in accordance with the impact attenuation requirements noted by the associated playground structures.
- B. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, concrete edge restraints, playground equipment installation and other relevant work has been completed.
- C. The contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines. Per CPSC and ASTM F-1292 Critical Height testing procedures at 30, 72, and 120 degrees F, the installed surface shall pass the 150 G-max and 850 HIC test for a height at least equal to the highest fall height of equipment as installed within its zone.
- D. When installed, the system shall be handicapped-accessible and comply with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA). Surface must comply with Massachusetts Architectural Access Board accessibility requirements and ASTM F1951.
- E. Contractor shall provide a written five (5) year performance guarantee from date of

substantial completion. The manufacturer shall provide a fifteen year (15-yr) limited warranty from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.

3.03 RUBBER KICK MAT

- A. Installation shall be as recommended by the manufacturer and shall be to the locations as indicated on the drawings.

3.04 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 18 23
RECREATIONAL COURT SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this section includes, but is not limited, to the following:

1. Grading and Compaction of Sub-base
2. Heavy Duty Acrylic Resurfacer
3. Asphalt Color Surfacing and Painted Graphics
4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:

1. Section 32 12 00 – Asphalt Paving
2. Section 32 14 00 – Unit Pavers
3. Section 32 16 00 – Curbing
4. Section 32 30 00 – Site Improvements
5. Section 32 31 00 – Fencing
6. Section 33 40 00 – Storm Drainage Utilities

1.04 SUBMITTALS

- A. Refer to individual items for additional submittal requirements.
- B. Provide manufacturer's product material information and system performance data along with material and system samples for each item specified in this Section for the Landscape Architect's review and approval prior to ordering materials.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.07 REFERENCE STANDARDS

- A. National Federation of State High School Associations (NFSHSA)
- B. International Amateur Athletic Federation (IAAF)
- C. National Collegiate Athletic Association (NCAA)

1.08 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS AND EXECUTION (Combined)

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 00 00 – EARTHWORK to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- A. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 00 00 – EARTHWORK. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected at no additional cost to the Owner.

2.02 ASPHALT PAVING

- A. Asphalt paving shall be of properly approved quality as specified under Section 32 12 00 – ASPHALT PAVING. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected at no additional cost to the Owner.

2.03 HEAVY DUTY ACRYLIC RESURFACER

- A. Heavy Duty Acrylic Resurfacer shall be applied on asphalt in areas without color surfacing. The heavy duty acrylic resurfacer shall meet the following requirements
 - a. Shall not be hazardous and free of lead, mercury, asbestos and formaldehyde
 - b. Shall fill and smooth the asphalt pavement with even color
 - c. Shall contain resin blend to withstand vehicular traffic
 - d. **Color shall be light grey**

- e. Shall have 3 coats applied
 - f. Contractor shall follow manufacturer's recommendation and process (weather, resting time period between each coat) for acceptance
- B. Basis of Design for Heavy Duty Acrylic resurfacer is "Novaplay Base Coat" manufactured or supplied by Nova Sports USA (www.novasports.com)
- C. Acceptable manufacturers must meet or exceed Basis of Design:
- a. Pattern Paving
 - b. California Sports Surfaces
 - c. StreetBond by GAF
- D. Sand shall be clean, dry sand with 100% passing through a #80 mesh sieve.
- E. Water shall be clean and potable.
- F. Dilution: 2 parts acrylic resurfacer to 1 part water. Add 10-15 lb sand (80-100 mesh) per gal of acrylic resurfacer.

2.04 ASPHALT COLOR SURFACING AND PAINTED GRAPHICS

- A. Provide and apply as shown on the drawings a high quality "vehicular rated" water-borne acrylic coating incorporating an epoxy additive to increase the wet abrasion resistance properties of the film. The product shall have the general specifications
- 1. Resist ultraviolet degradation for long-term protection and color stability.
 - 2. Provide durable, non-skid texture for exterior asphalt surface.
 - 3. Resist wear and abrasion through the incorporation of an epoxy additive.
 - 4. Protect against asphalt degradation by sealing in the vital oils of the asphalt mix.
 - 5. No toxic fumes or objectionable odor. Must meet VOC requirements.
- B. Basis of Design is product "STREETCOAT Epoxy Modified Resin, Traffic Coating" by Pattern Paving (www.patternpaving.com) or approved equal that meets requirements and provide custom color. Contact: Gerry Oliver (gerry@patternpaving.com ; 704-996-7248)
- C. Approved Equal must meet the following composition and performance characteristics as described below.

1. Table 1: Material Composition

CHARACTERISTICS	REQUIREMENT
ASTM D2369 % Solids by weight	> 76%
ASTM D26297 % Solids by volume	> 57.9%
Weight per gallon	13.9 lbs/gal 6.3kg / 3.78 litre
ASTM D-3723 % Pigment by weight	> 62%
Boiling Range	212°F - 100°C
ASTM D-3278 Flash Point	>230°F - 110°C
Specific Gravity (H2O=1).....	1.67
Vapor Density	Heavier than air

Hazardous Ingredients	none
Mix Ratio (Coating : LiquidTint) gal/pints	5gal / 1pint 18.92 Litre / .473 Litre
Wet mil thickness per coat	10 to 15 thousands/inch
Recommended minimum number of coats.....	3

Table 2: Performance Requirements

TEST	REQUIREMENT
Dry Time (to re-coat) @ 50°F (10°C).....	120 min
Dry Time (to re-coat) @ 90°F (32°C).....	30 min
85% Day Cure (to permit traffic) @ 80°F (26°C).....	2 hours
Gloss: ASTM D523 (85° Gardner).....	<3
Hardness: ASTM D3363	3H pencil
Shore Hardness: ASTM D2240	63 Type D
ASTM 2486 Gasoline Scrub Resistance..... To 50% of coating thickness (30 mils).....	>5000 cycles to max loss of 50% coating thickness
ASTM 2486 Motor Oil Scrub Resistance..... To 50% of coating thickness (30 mils).....	>5000 cycles to max loss of 50% coating thickness
Temp. limits for service (of cured material)	-35°F to 145°F -37°C to 63°C
ASTM G-155 Color Stability..... QUV 2,000 hrs (CIE units).....	Old Brick Color ΔE < .5
Pedestrian Friction ASTM E303 British Pendulum.....	88 BPN Dry 72 BPN Wet
Mandrel Bend Test ASTM D522.....	>3/16" Pass >.476cm Pass
Water Absorption ASTM D570 7day.....	<9%
VOC Content ASTM D3960.....	<.67oz/1.06 qt <19 grams/liter
Taber Abrasion Dry H-10 ASTM D4060 1day cure.....	.006oz/1000cycles .17g/1000 cycles
Taber Abrasion Wet H-10 ASTM D4060 7day cure.....	.015oz/1000cycles .43g/1000 cycles
Adhesion to Asphalt ASTM D4541 >245 lb./sq.in.....	Cohesive Asphalt Failure prior to Adhesion Failure

- D. Approved Equal must meet the following composition and performance characteristics as described below.

- E. There will be a minimum of 3 coats applied for all the asphalt color surfacing graphics.
- F. The following rainbow colors shall be used as indicated on the drawings and in the plan rendering below:



- 1. Basketball Court Main Color: Custom Blue. The grey and green will be standard colors.
 - 2. Painted Rainbow Stripes – There will be a total of 8 different colors as shown in the rendering. Colors will be custom if standard colors do not achieve the rainbow effect.
- G. The final color selection will be specified upon seeing samples and approved during the submittal process by the Landscape Architect

2.05 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 31 00
CHAIN LINK FENCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section includes, but is not limited to the following:

1. Grading and Compaction of Sub-base
2. Concrete Footings for Fencing
3. Black Vinyl Coated Chain Link Fence
4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:

1. Section 129300 – Site Furnishings and Improvements
2. Section 311000 – Site Clearing and Prep
3. Section 312300 - Excavation Filling and Grading
4. Section 321216 - Asphalt Paving
5. Section 321313 – Concrete

1.04 SUBMITTALS

- A. Refer to individual site improvements for additional submittal requirements.
- B. Provide manufacturer's product material information and system performance data along with material and system samples for each item specified in this Section for the Landscape Architect's review and approval prior to ordering materials.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products adequately protected against damage. Handle in strict compliance with manufacturer's instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to, chipping, staining, cracking and other damage. Cracked, chipped, or stained units will be rejected and shall not be utilized in this work. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.07 REFERENCE STANDARDS

- A. Chain Link Fence Manufacturers Institute (CLFMI).
- B. American Society of Testing and Materials (ASTM).
- C. ASTM F1184 Specification for Industrial and Commercial Horizontal Slide Gates

1.08 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS & EXECUTION (Combined)

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 312300 – Excavation Filling and Grading to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 312300 – Excavation Filling and Grading. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.02 CONCRETE FOOTINGS FOR FENCING ITEMS

- A. Construct concrete footings where shown on the Drawings.
- B. Concrete for footings shall be 4,000 lb. concrete as specified in Section 03 30 00 –CAST-IN-PLACE CONCRETE.
- C. Place concrete on moist subgrade or against prepared footings in continuous operation between transverse joints or individual sections. Vibrate all concrete. Do not place concrete in freezing temperatures or on frozen base.

1.

2.03 BLACK VINYL COATED CHAIN LINK FENCE

- A. Submittals:
 - 1. Shop Drawings: Supply shop drawings at an approved scale for location, installation and erection of all components of the chain link fence.

2. Product information: Provide manufacturer's product data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation.
3. Material Selection and Samples: Submit samples showing the material size, gauge and finish for all components required for construction, including but not limited to:

- a) A 12"x12" sample of fence fabric.
- b) A 12" section of each type of fence pipe required.
- c) Provide 1 of each type of fitting required.
- d) Provide a 6" sample of fabric tie material.

B. Scope:

1. This specification covers colored chain link fence, including chain link fabric, framework, and fittings. Fence heights / gate heights and widths shall be shown on the drawings.
- C. PVC Coating: Fence fabric and framework shall be thermally-fused vinyl coating over galvanized steel. "A Bonded or extruded and glued" fabric will not be accepted.
- D. Color: All fence material including fabric, framework, fittings, privacy slats and hardware shall be black.
- E. Fabric: Fabric for all fences shall be a 2" diamond mesh unless otherwise noted. Fabric shall be #6 gauge core wire unless otherwise noted (0.192" nominal wire diameter) with a minimum breaking strength of 2170 pounds, thermally fused in accordance with ASTM F668-2b. The weight of the zinc coating on the steel wire shall be 0.3 oz. per square foot minimum. Chain link fabric shall be color matched with framework materials. Fabric shall be knuckled at both selvages.
- F. Framework: Shall consist of terminal posts, line posts, top rail, bottom rail, mid rail, truss rods at end and corner posts and gate frames.
- G. Posts and rails shall be steel pipe, Type 1: ASTM F 1083, standard weight, schedule 40, minimum yield strength of 25,000 psi, sizes as indicated below. Before color is applied, all materials shall be given a minimum 1.8 ounce per s.f. coating of zinc. PVC-coated finish shall be applied in accordance with ASTM F 1234, apply supplemental color coating of 12 mils (0.254-0.356 mm) of thermally fused PVC.

1. Sizes of Framework:

1) Fences less than 5' Height

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	2.375"	3.65
Line Post	1.900"	2.72
Top and Bottom Rail	1.660"	2.27

2. Fences greater than 5' Height but less than 8' Height

- 1) Provide mid rail braces* between all end/corner posts and adjacent line posts at all fences 5' – 8' in height.

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	2.875"	3.65

Line Post	2.375"	2.72
Top and Bottom Rail	1.660"	2.27
Continuous Mid Rail	1.660"	2.27

3. Fences equal to or greater than 8' Height:

- 1) Provide continuous mid rails* for all fences 8'-12' in height.

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	4.0"	9.10
Line Post	2.875"	5.79
Top and Bottom Rail	1.660"	2.27
Continuous Mid Rail	1.660"	2.27

- H. Top rail couplings 6-inch minimum in length shall be spaced at maximum 20-foot centers and 9-gauge minimum fabric tie wires shall be spaced at 18-inch maximum centers.

I. Accessories:

- Chain link fence accessories: ASTM F 626, Provide items required to complete fence system. Galvanize each ferrous metal item in accordance with ASTM A 153 and finish to match framing (Black Vinyl Coating).
- Post Caps: Formed steel, weather tight dome-shape closure cap. Provide one cap for each post. Caps shall be affixed to the post securely so as to prevent removal.
- Stretcher Bars: One-piece lengths equal to 2-inches less than full height of fabric with a minimum cross section of 3/16 inch x 3/4-inch. Provide stretcher bars where chain link fabric meets terminal posts.
- Tie Wire: 9-gauge vinyl coated galvanized steel wire for attachment of fabric to line posts.

- J. General: Certain components not adaptable to the here in specified coating process may be color coated by other means. All fittings shall be pressed steel or malleable iron. Tie wires shall be minimum 9-gauge PVC coated steel or 6-gauge aluminum. Line and terminal posts to be of sufficient length to be set to the full depth of concrete footing indicated on the Drawings. Maximum spacing of line posts shall be 10-feet.

- Each fence panel shall be constructed such that it will pass the following test. Deflection of the fence fabric shall be no greater than 2 inches when a force of 30 pounds is applied in the center of a framed panel, perpendicular to the plane of the fence fabric. Fabric shall return to original position true to the plane of the fence when force is released.

- K. Existing posts to remain shall be straightened and repainted as necessary.

2.04 CLEANING, REPAIR AND PROTECTION

- Straighten and refurbish existing poles as needed.
- Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.

- C. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- D. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 90 00
PLANTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:

1. Mulch
2. Inspection and acceptance
3. Pruning and maintenance of existing trees to remain
4. Cleaning and protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:

1. Section 31 00 00 – Earthwork
2. Section 31 10 00 – Site Clearing and Preparation
3. Section 31 25 00 – Erosion and Sedimentation Controls
4. Section 32 12 16 – Asphalt Paving
5. Section 32 18 16.13 – Playground Protective Surfacing
6. Section 32 18 23 – Court Surfacing
7. Section 32 30 00 – Site Improvements
8. Section 32 31 00 – Fencing
9. Section 32 91 00 – Loam and Planting Preparation
10. Section 32 92 00 – Turf and Grasses
11. Section 33 40 00 – Storm Drainage Utilities

- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1. The planting subcontractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 REFERENCES

- A. The following standards shall apply to the work on this Section.

1. American National Standards Institute (ANSI):

Z60.1 American Standard for Nursery Stock, latest edition, published by American Association of Nurserymen, (AAN).

1.05 SUBMITTALS

A. Material Samples and testing:

1. Provide full analysis of existing on-site loam, and off-site loam source from a laboratory that has been approved in writing by the Architect. Sampling and testing shall be as specified, and performed under the work of Section 32 91 00 Loam and Planting Soil Preparation.
2. Planting mulch: submit one gallon-sized Ziploc bag.
3. Provide manufacturers' certified analysis for soil amendments and fertilizers.

1.06 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer and pesticide applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner's Project Representative at least two (2) weeks prior to scheduled date of application.

1.07 QUALITY ASSURANCE

- A. Subcontract planting work to a single landscape construction company specializing in this work. All work shall be performed by experienced landscape professionals familiar with planting procedures and under the full-time supervision of a qualified foreman. The General Contractor shall notify the Architect in writing upon the selection of a landscape subcontractor and arrange for a pre-construction meeting between the Architect, General Contractor, and Subcontractor. Such meeting shall seek to establish the proposed schedule, source of plants, consideration of substitutions and general review of procedures.
- B. Inspection of Plant Materials: Plant materials are subject to inspection and approval upon delivery to the project site. Certificates of inspection of plant material shall be furnished as may be required by Federal, State and other authorities. No plants shall be planted until required inspections have been made and the plants approved.
- C. Label at least one tree and one shrub of each species within each plant grouping with a securely attached waterproof tag bearing legible designation of botanical and common name.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials in manufacturer's original unopened containers showing weight, analysis and name of manufacturer. Comply with manufacturer's instructions and recommendations for storage and handling. Protect all materials from damage, deterioration, injury and theft while stored at the site.

1.09 EXAMINATION OF CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor prior to starting work and any incorrect grading or inadequate drainage shall be reported to the Architect prior to beginning work.

PART 2 - PRODUCTS

2.01 LOAM

- A. Loam for planting shall be approved, specified, provided, and installed under the work of Section 32 91 00, Loam and Planting Preparation, and that has been pH adjusted according to particular planting applications and improved through the addition of organic material as directed under this Section.
- B. Planting loam mix for groundcover, perennial and bulb planting shall have a pH value of 5.5 to 6.5, which has been thoroughly premixed with organic material in the proportions of one part organic matter (humus or compost), with 5 parts of approved loam. Organic material shall be specified, provided, and installed under Section 32 91 00, Loam and Planting Preparation.

2.02 SOIL ADDITIVES

- A. Soil additives shall be specified, provided, and installed under the work of Section 32 91 00 Loam and Planting Preparation.

2.03 BARK MULCH

- A. Bark Mulch: for planting beds shall be a 100% pine bark product free from lumps, dirt, or deleterious materials. Bark shall be substantially free from wood fibers. No pieces of bark shall exceed three (3) inches in any dimension, or be thicker than 1/4 inch. Mulch shall have been aged for a minimum of six months, and not longer than two years. Bark shall be no more than two years old. All plant beds shall receive a two to four inch layer of mulch, not to exceed four inches.

2.04 WATER

- A. Water: shall be furnished by the Contractor from a legal off-site source via water truck and be suitable for irrigation, free of toxic ingredients. Sources of water at or near the site that are made available to the Contractor are a convenience to the Contractor. Limitations of site water sources shall be supplemented by off-site sources at the Contractor's expense to meet the maintenance requirements of this Section. Any municipal fees associated with providing water for this work shall be borne by the Contractor.
 - 1. Watering Equipment: The Contractor shall furnish sufficient watering equipment to distribute water evenly with complete coverage daily to all seeded areas.
 - 2. All new and transplanted trees shall be furnished and installed with 20 gallon, slow release watering Treegator bags or approved equal. Manufactured by Spectrum Products, Inc., Youngsville, NC, phone 1-800-treegator.

PART 3 - EXECUTION

3.01 ACCEPTANCE

- A. Upon completion of planting work per Construction Phase, the Contractor shall request in writing that the Landscape Architect formally inspect the planting work. The General Contractor, Owner, and landscape Architect shall walk all areas of completion to determine date of turnover to the Owner.

- B. Following the correction of all Punch List deficiencies, the Contractor shall request in writing that the Landscape Architect formally inspect the planting work. If plant materials and workmanship are acceptable, the Landscape Architect will issue a written Certificate of Final Acceptance to the Contractor.

3.02 PRUNING AND MAINTENANCE OF EXISTING TREES TO REMAIN

- A. This shall be coordinated with the Town Arborist and Landscape Architect on the field.

3.03 CLEANING AND PROTECTION

- A. During operations, keep pavements clean and work area in an orderly condition. Protect all plantings from damage by other contractors and trades and trespassers. After completion of the work, the Contractor shall remove all debris, materials, rubbish, excess dirt, etc. from the site and dispose of them in a legal manner. The premises shall be left clean and presentable to the satisfaction of the Architect.

END OF SECTION

**SECTION 32 91 00
LOAM AND PLANTING PREPARATION**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:

1. Loam from off-site, if on-site loam is insufficient.
2. Sampling and testing of on-site and off-site loam
3. Sand Based Structural Soils (SBSS)
4. Sand
5. Modifying, screening, placing, spreading and grading of loam
6. Fine grading
7. Erosion control matting
8. Inspection and acceptance
9. Cleaning and protection

1.3 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:

1. Section 11 68 00 – Playground Equipment
2. Section 12 93 00 – Site Furnishings
3. Section 31 10 00 – Site Clearing and Preparation
4. Section 31 23 00 – Excavation Filling and Grading
5. Section 32 16 00 – Asphalt Paving
6. Section 32 13 13 – Concrete
7. Section 32 18 16.13 – Playground Protective Surfacing
8. Section 32 92 00 – Turf and Grasses
9. Section 33 40 00 – Storm Drainage Utilities

- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - D 75 Practice for Sampling Aggregates
 - D 422 Test Method for Particle-Size Analysis of Soils
 - D698-00a Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³)

D1557 Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using
10-lb rammer and 18-in. drop

- B. A.O.A.C.: Association of Official Agricultural Chemists.

1.5 SUBMITTALS

- A. At least 30 days prior to ordering materials, the Contractor shall submit to the Architect representative samples, certifications, manufacturer's product data and certified test results for materials as specified below. No materials shall be ordered or delivered until the required submittals have been reviewed and approved by the Architect. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The Architect reserves the right to reject, on or after delivery, any material that does not meet these Specifications.
- B. Existing On-Site loam: Sample and test existing on-site loam. The Contractor shall sample the existing loam soils of the construction site in the following manner:
1. The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard on-site stockpile of existing loam for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for securing samples from stockpiles.
 2. Preparation of Samples: Contractor shall place these soil slices into a large, clean plastic container and mix thoroughly. Contractor shall take one cup of soil mixture and dry it at room temperature (do not dry samples in an oven or on a stove or radiator). Once soil is dry, place soil in sandwich size zip-type plastic bag and close it tightly. Label each sample on outside of bag, identifying sample by soil type and acre. Provide an approved site plan showing locations of stockpiles cross referenced to soil samples and test results.
- C. Loam from off-site, if on-site loam is insufficient: The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard proposed stockpile of loam borrow for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for securing samples from stockpiles.
- D. Testing will be at the Contractor's expense. Contractor shall deliver all samples to testing laboratories via overnight courier and shall have the testing report sent directly to the Architect. Perform all tests for gradation, organic content, soil chemistry and pH by UMASS Soil and Plant Tissue Laboratory, West Experiment Station, North Pleasant Street, University of Massachusetts, Amherst, MA 01003, (413) 545-2311. Testing reports shall include the following tests and recommendations.
1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
 2. Percent of organics shall be determined by the loss on ignition of oven-dried samples. Test samples minus #10 material shall be oven-dried to a constant weight at a temperature of 450 degrees Fahrenheit (752 degrees Centigrade).
 3. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, extractable Aluminum, Lead, Zinc, Cadmium, Copper, Soluble Salts, and pH and buffer pH. A Conductivity Meter shall be used to measure Soluble Salts in 1:2 soil/water (v/v). Except where otherwise noted, nutrient tests shall be for available nutrients.
 4. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish lawn and planting work as specified.

- E. Compost: Submit supplier's certification of contents.
- F. Limestone: Submit supplier's certification that the limestone being supplied conforms to these Specifications.
- G. Acidulant: Submit supplier's certification that the acidulant being supplied conforms to these Specifications.
- H. Fertilizer:
 - 1. Submit product data of seeding/sodding and planting fertilizer and certificates showing composition and analysis. Submit fertilization rates for fertilizer product based upon soil testing, analysis, and recommendations as specified, performed and paid for under in this Section.

1.6 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner's Project Representative at least two (2) weeks prior to scheduled date of application.

1.7 EXAMINATION OF CONDITIONS

- A. The Contractor and any sub-Contractor responsible for the execution of the Work of this Section, shall review the subgrades and elevations to verify that the subgrades have been prepared as required by the Contract Documents, prior to proceeding with the spreading of the planting loam. Carefully review the requirements of this Section, to understand the requirements of percolation testing, compaction, slope and absence of debris of the subgrade prior to spreading of the loam borrow.
- B. The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to sampling and testing of all materials prior to final planting installation.

1.8 DEFINITIONS

- A. The following definitions shall apply to the work of this Section.
The following size distributions of mineral particles by diameter and sieve size shall apply to the following conventional names of soil types:

<u>Conventional Name</u>	<u>Retained on U.S. Sieve No.</u>	<u>Diameter (mm)</u>
Very coarse sand	#18	1 - 2
Coarse sand	#35	0.5 - 1
Medium sand	#60	0.25 - 0.5
Fine sand	#140	0.10 - 0.25
Very fine sand	#270	0.05 - 0.10
Silt	by hydrometer	0.002 - 0.05
Clay	by hydrometer	Less than 0.002

PART 2 - PRODUCTS

2.1 LOAM

- A. Loam: The Contractor shall provide additional loam as necessary to complete the work of this Section from off-site sources if there is not sufficient material on site suitable to complete the Work. The Contractor shall submit samples and an analysis from each proposed source of material. Provide loam that is fertile, friable, natural loam reasonably free from subsoil, clay lumps, brush, litter, roots, stones and other foreign materials.
- B. Loam shall be one of the following sandy loams; "coarse sandy loam", "sandy loam", "fine sandy loam", determined by mechanical analysis ASTM D-422 and based on the USDA Classification System, and as defined in this Section. It shall be uniform in composition, without admixture of subsoil. It shall be free of stones greater than one and one-quarter inches, lumps, plants and their roots, debris and other extraneous matter.

C. Textural Classification:

<u>Millimeter</u>	<u>Percent Passing by Weight</u>	
	<u>Maximum</u>	<u>Minimum</u>
2	-----	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.02 7	2	

Soil test shall include breakdown of sand and subfractions from very course to very fine.

1. One hundred percent by weight shall pass a one-inch (1") sieve opening, and the maximum retained on the 1/4" sieve shall be 20 percent by weight of the total sample.
 2. On-site and off-site loam shall be screened to achieve above specified sieve analysis.
 3. The contractor should anticipate amending the onsite loam for conformance to the requirements as stated herein.
- D. Organic content and pH: loam shall contain not less than 6% or more than 10% organic matter of the sample that passes a 1/4" sieve when determined by the wet combustion method on a sample dried at 105 degrees C. The pH value shall be within a range of 5 to 6 for loam to be used in planting areas and within a range of 6 to 7 for loam to be used in seeding areas.
1. Loam borrow shall be pH adjusted for particular planting applications and shall be adjusted prior to delivery to the Project sites as recommended by UMASS Soil & Plant Tissue Laboratory test results.
 - a. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH downward to required levels.
 - b. When pH of loam borrow is less than 7 use either sulfur or ferrous sulfate to adjust pH downward to required levels.
 - c. When pH of loam borrow must be raised to the required levels use limestone.
 - d. Regardless of amendment the Contractor chooses to use, the Contractor, not the Owner, shall be responsible for obtaining specified pH by seeding and/or planting time.

- E. Loam shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. Topsoil shall not have levels of extractable aluminum greater than 200 parts per million except for acid-loving plants. Cation Exchange Capacity (CEC) shall be between 10 and 15.
- F. All planting loam provided from off-site sources shall be brought to the site meeting all specification requirements. There must be no mixing or amending of soil on site. The loam borrow must not be handled or moved when in a wet or frozen condition. Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary noxious weeds
- G. Screened loam which has been stockpiled on the site may be used provided it can be made to comply with this Specification and that it has been screened to meet the above requirements.
- H. To assure planting loam purchased and screened loam stockpiled fulfills specified requirements regarding textural analysis, organic matter content, and pH, soil testing results will be obtained and paid for by the Contractor and submitted to the Architect for approval before any soil is placed or delivered to the site.
- I. Loam at the fiber reinforced fire lane shall meet the follow particles size criteria.

US STANDARD SIEVE NUMBER	%RETAINED
6	0
10	0
18	<5% than 10 combined
35	<25%
60	50% - 90%
100	<15%
270	<5%

- 1. Fineness Modulus: 1.4 – 2.0
- 2. Uniformity Coefficient: < 4 (2.5 – 3.5)

2.2 SAND BASED STRUCTURAL SOIL (SBSS), AERATION PIPE AND GRATES

- A. Sand-Based Structural Soil shall consist of a blend of approximately 60% by volume Coarse Sand, 15% by volume Base Loam and 25% by volume Organic Amendment. The components shall be blended to create a uniform mixture. Percentages will be adjusted as necessary to achieve the following grain size distribution and criteria below for material passing the #10 sieve by weight.

U.S. Sieve Size No.	Minimum	Maximum
10	100	(Coarse Sand)
18	68	90 (Coarse Sand)
35	38	63 (Coarse Sand)
60	18	39 (Fine Sand)
140	10	18 (Fine Sand)
270	8	10 (Silt)
0.002mm	1	4 (Clay)

- 1. Maximum size shall be one inch largest dimension. The maximum retained on the #10 sieve shall be 15% by weight of the total sample.

2. The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 3.0 or less ($D70/D20 < 3.0$).
 3. The final mix shall have a saturated hydraulic conductivity of no less than 6.0 inches per hour according to test procedure ASTM D5856-95 (2000) when compacted to a minimum of 88 percent of the maximum density as determined by AASHTO T-99, unless the soil will be placed in an area that experiences loading. If the soil will be placed under sidewalk, curbs or gutter, the density shall be a minimum of 93 percent maximum dry density as determined by AASHTO T-180. The mixes shall be compacted at 60% to 80% optimum moisture content.
 4. Organic content shall be between 2.5 and 3.5 percent by weight.
 5. Unless otherwise specified or recommended by the Soil Supplier's Soil Scientist: pH shall be between 6.5 and 7.2; CEC shall be a minimum of 6; and Soluble Salts shall be less than 500 ppm/0.5 mmhos/cm.
- B. Aeration pipe shall be 4" diameter single wall high density corrugated perforated polyethylene pipe and fittings meeting ASTM F667. Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 323410C or 333410C as defined and described in the latest version of ASTM D3350 manufactured by ADS Advanced Drainage Systems, Inc. 4640 Trueman Blvd, Hilliard, OH 800-821-6710, or approved equal.
- C. Grates at finish grade for the vertical aeration pipe risers shall be HDPE with square grate to fit 4" round pipe securely, gray in color, as manufactured by NDS, Inc. 877-412-7467 www.ndspro.com or approved equal.

2.3 SOIL ADDITIVES

- A. Soil additives shall be used to counteract soil deficiencies as recommended by the soils analysis.
- B. Lime: Provide approved agricultural limestone containing not less than 85% of total carbonates with a minimum of 30% magnesium carbonates. Lime shall meet Massachusetts Department of Food and Agriculture standards for Fine-Sized Classification so that 50% passes a 100 mesh, 60% passes through a 60-mesh sieve, and 95% will pass a 20 mesh sieve.
- C. Aluminum Sulfate shall be unadulterated, 57% (Ortho Division, Chevron Chemical Company), or approved equal.
- D. Sand additive shall be comprised of clean, coarse, granular sand, subangular to sub-round, free from organic matter and deleterious substances. Sand shall be washed sand in accordance with the table below.

<u>SIEVE SIZE</u>	<u>% passing</u>
-------------------	------------------

No. 4	100
No.8	90-100
No. 16	80-100
No. 30	25-60
No. 50	0-25
No. 100	0-5
No 200	0-3

1. The sand should have a coefficient of uniformity (D60/D10) of less than 4.0

2. Amend existing loam to achieve requirements as described in 2.1.

E. Compost: Provide compost as needed to raise the Organic Content of the topsoil to within specified range. Compost shall be:

1. Compost shall be derived from organic leaf and yard residues that meet all State Environmental Protection Agency requirements. The product shall be well composted, free of viable weed seeds and contain material of a generally humus nature capable of sustaining growth of vegetation, with no materials toxic to plant growth. The material shall be fully composted. The composted material shall have a moisture content such that no visible free water or dust is produced when handling the material. Submit complete product analysis including: Organic Nitrogen, Carbon/Nitrogen Ratio, Total Phosphorous, Total Potassium, Organic Matter, pH, particle size and product density.

2. Compost products shall meet the following physical criteria:

<u>Parameters</u>	<u>Range</u>
pH	5.5 – 8.0
Moisture Content	35% - 55%
C:N ratio	15 – 30:1
Organic Matter	> 40%
Particle Size	< 3/4"
Soluble Salts	< 4.0 mmhos (ds)
Bulk Density	< 1200 lbs/cuyd
Foreign Matter	< 1% by weight
Solvita Maturity Rating	5 - 7

b. Acceptance of composted products shall be based on the following submittals by the Contractor:

- i. A request for Approval of a Material Source.
- ii. A copy of the Composting Permit for the Material Source selected.
- iii. Certification by the supplier that the compost product meets state EPA guidelines and that it originates from 100 percent recycled vegetation material that has been aerobically composted.

G. Bone meal shall be fine ground, steam cooked, packing house bone with a minimum analysis of 23% phosphoric acid and 4% nitrogen.

H. Fertilizers: Commercial fertilizer shall be a complete fertilizer complying with all State and Federal Fertilizer laws. Fifty-percent of available nitrogen shall be in a slow-release form as is found in certain urea-form products, or natural organic forms, or a combination of both. The salt index of the fertilizer shall not exceed 35. It shall contain the following percentages by weight.

		Lawns
Nitrogen	(N)	10%
Phosphorus	(P)	10%
Potash	(K)	10%

Fertilizer shall be delivered and mixed as specified, in standard size unopened containers, showing weight, analysis in compliance with Massachusetts Department of

Food and Agriculture regulations, and name of manufacturer. It shall be stored in a weatherproof storage place, in such a manner that it will be kept dry, and its effectiveness not impaired.

1. Fertilizer for planting shall be formulated for top-dressing, soil surface application to plants. Fertilizer shall be designed and certified by the manufacturer to provide controlled release of fertilizer continuously for not less than 9 months. One hundred percent of the nitrogen content shall be derived from organic materials. Nitrogen source shall be coated to ensure slow release. Fertilizer percentages of weight of ingredients shall be as recommended by the soil testing and analysis specified, performed, and paid for under this Section, Loam and Planting Preparation.

PART 3 - EXECUTION

3.0 KICKOFF MEETING:

- A. At least 10 working days prior to the start of work, the Contractor shall request a landscape construction kickoff meeting with the owners representative, landscape architect and any other parties involved with landscape construction. Contractor shall articulate the means and methods of subgrade preparation, soil placement and other steps outlined in the Specification.

3.1 FILLING AND COMPACTION

- A. Verify that the subgrade preparations have been reviewed and accepted, including removal of all existing vegetation prior to placement of planting soils.
 1. Notify the Landscape Architect of soil placement operations at least seven calendar days prior to the beginning of work.
- B. Perform percolation tests on existing subsoils or placed fill prior to placing and spreading loam for seeding, sodding, and planting:
 1. Perform percolation testing of subsoil or placed fills to determine whether or not the subgrade will drain properly. Perform percolation tests as specified in this Section.
 2. In the event that percolation testing indicates that the subsoil, placed fills or ordinary borrow has been over compacted and will not drain, the contractor shall loosen up the top 36 inches (one meter) of the subgrade to be planted, seeded, or sodded by ripping or other mechanical means. Recompect the borrow by driving a small, tracked bulldozer over the area at low speeds so that the tracks of the bulldozer pass over the affected area and the soil is compacted to a density that will percolate as specified under the work of this Section. Under no circumstances shall wheeled vehicles be driven over subsoil, placed fills or ordinary borrow that have been shown to percolate or subsoil, placed fills or ordinary borrow that has been loosened and shown to percolate.
 3. Perform sufficient percolation tests in areas of poorly draining or compacted subsoil or compacted placed fills as directed by the Architect to ensure that these underlying soils drain. Likewise, perform sufficient percolation tests after ripping and loosening to ensure that the soils are no longer too compact to drain.

- B. Subsoil or ordinary borrow shall have been excavated and filled as required by the Contract Documents. Do not damage the work previously installed. Maintain all required angles of repose of materials adjacent to the loam as shown on the Contract Documents. Do not over excavate compacted subgrades of adjacent pavement or structures during loaming operations.
- C. Confirm that the subgrade is at the proper elevation and that no further earthwork is required to bring the subgrade to proper elevations. Subgrade elevations shall slope parallel to the finished grade and or toward any subsurface drain lines as shown on the Contract Documents. Provide a written report to the Architect that the subgrade has been placed to the required elevations and that the subgrade drains water at the rates specified under the required percolation tests specified, performed and paid for under this Section, Loam and Planting Preparation. Perform no work of placing and spreading loam until elevations have been confirmed and written report has been accepted by the Architect.
- D. Clear the subgrade of all construction debris, trash, rubble and any foreign material. In the event that fuels, oils, concrete washout or other material harmful to plants have been spilled into the subgrade material, excavate the soil sufficiently to remove the harmful material. Such construction debris, trash, rubble and foreign material shall be removed from the site and disposed of in a legal manner. Fill any over excavation with approved fill and compact to the required subgrade compaction levels.
- E. Do not proceed with the installation of loam until all utility work in the area has been installed.
- F. Protect adjacent walls, walks and utilities from damage or staining by the loam. Use 0.5-inch plywood and or plastic sheeting to cover existing concrete, metal and masonry work and other items as directed during the progress of the work. Clean up all trash and any soil or dirt spilled on any paved surface at the end of each working day.

3.2 FINE GRADING

- A. Immediately prior to dumping and spreading loam, the subgrade shall be in a friable condition, cleaned of all stones greater than 2 inches and all debris or rubbish. Such material shall be removed from the site, not raked to the edges and buried. Notify the Architect that the subsoil has been cleaned and request his/her attendance on site to review and approve subgrade conditions prior to spreading loam borrow.
- B. Loam borrow delivered to the site shall be protected from erosion at all times. Materials shall be spread immediately. Otherwise, materials that set on site for more than 24 hours shall be covered with tarpaulin or other soil erosion system acceptable to the Architect and surrounded by silt fence.
- C. No loam borrow shall be handled, planted, or seeded in any way if it is in a wet or frozen condition. A moist loam borrow is desirable.
- D. Soil additives shall be spread and thoroughly incorporated into the layer of loam by harrowing or other methods reviewed by the Architect. The following soil additives shall be incorporated:
 - 1. Ground limestone or acidulant as required by soil analysis to achieve the required pH as described in this Section. Spread limestone at the rate required by soil analysis up to a maximum limit of 200 pounds per 1,000 square feet. Should recommendations of soil analysis require greater rates of application than 200 pounds per 1,000 square feet, a surface application of limestone not in

excess of 50 pounds per 1,000 square feet shall be made to the established lawn during the season after Final Acceptance. This second application of limestone shall be performed and paid for under the work of Section 32 92 00, Turf and Grasses, at rates determined under the testing requirements of this Section, Loam and Planting Preparation.

2. Fertilizer at the rate and of analysis recommended by the soil analysis. For lawn areas this fertilizer application shall be the first in a series of fertilizer applications made under this Contract and shall be applied and incorporated under this Section, Loam and Planting Preparation. A second and third application of fertilizer for turf areas shall be specified, spread and paid for under Section 32 92 00 Turf and Grasses, of this Specification. For planting areas this fertilizer application shall be primary application and the process of application described under Section 32 90 00, Planting of this Specification and specified, provided, performed and paid for under this Section, Loam and Planting Preparation.
 3. Compost, sand or other soil amendments as required by soil analysis.
- E. Loam shall be sampled and tested as specified, performed and paid for under the work of this Section, to verify application and incorporation of limestone, fertilizer and other soil amendments.
- F. After loam and required additives have been spread, carefully prepare the loam by scarifying, harrowing, or tilling the loam to integrate soil additives into the top 8 inches of the loam. Remove all large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Remove from unscreened soils all stones over 3/4 inch in diameter from the top 6 inches of the loam bed. Loam shall also be free of smaller stones in excessive quantities as determined by the Architect and as specified herein.
- G. Sufficient grade stakes shall be set for checking the finished grades. Stakes must be set in the bottom of swales and at the top of slopes. Deviation from indicated elevations that are greater than one-tenth of a foot shall not be permitted. Connect contours and spot elevations with an even slope. Finish grades shall be smooth and continuous with no abrupt changes at the top or bottom of slopes.
- H. During the compaction process, all depressions caused by settlement or rolling shall be filled with additional loam and the surface shall be regraded and rolled until presenting a smooth and even finish corresponding to the required grades.
- I. The Contractor shall install loam in successive horizontal lifts no thicker than 6 inches in turf areas and 12 inches in plant bed areas to the desired compaction as described herein. The Contractor shall install the soil at a higher level to anticipate any reduction of loam borrow volume due to compaction, settling, erosion, decomposition, and other similar processes during the warranty period. The Architect will ensure that the full depths of loam for lawn and plant beds are obtained by digging holes in the loam at the same frequency as for compaction testing.
1. Compact loam to the required density as specified.
 2. Maximum dry density for loam shall be determined in accordance with ASTM D698. The following percentages of minimum to maximum dry densities shall be achieved for fill materials or prepared subgrades.

In lawn, plant beds and tree pits:

	Minimum	Maximum
Soils within planting areas in top eighteen inches of finished grade	80%	85%

Soils within Lawn Areas in top eighteen inches of finished grade	84%	86%
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3. The surface area of each lift shall be scarified by raking prior to placing the next lift.

- J. In addition to the range cited above, compact each lift sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil. The loam borrow in each lift should feel firm to the foot in all areas and make only slight heel prints. At completion of the loam borrow installation, the soil should offer a firm, even resistance when a soil sampling tube is inserted from lift to lift. After the placement of each lift, perform percolation tests to determine if the soil has been over compacted. Perform the following percolation test procedure:

1. Dig a hole in the installed soil that is a minimum of 4 inches in diameter. Holes in 6-inch lift in turf areas shall be 4 inches deep. Holes in 12-inch lifts in plant beds shall be 8 inches deep. Do not penetrate through the lift being tested.
2. Fill the hole with water and let it drain completely. Immediately refill the hole with water and measure the rate of fall in the water level.
3. In the event that the water drains at a rate less than one inch per hour, till the soil to a depth required to break the over compaction.
4. Perform a minimum of one soil percolation test per 10,000 square feet area of turf area and 2,500 square feet of tree and shrub planting area as directed by the Architect.

- K. Select equipment and otherwise phase the installation of the loam to ensure that wheeled equipment does not travel over subsoil, placed fills or ordinary borrow or already installed soil. Movement of tracked equipment over said soils will be reviewed and considered for approval by the Architect. If it is determined by the Architect that wheeled equipment must travel over already installed soil, provide a written description of sequencing of work that ensures that compacted soil is loosened and uncompacted as the work progresses or place one-inch thick steel plate ballast (or equivalent ballast approved by the Architect) over the length and width of any travel way to cover loam borrow to protect it from compaction.

- L. Disturbed areas outside the limit of lawn work shall be graded smooth and spread with a minimum of 6 inches of loam to the finished grade.

- M. Contractor shall be responsible for maintaining all stockpiles of existing, on-site loam on the site until final placement of all loam has been approved by the Architect in writing. No loam shall be removed from the site unless approved by the Architect in writing. Upon written approval by the Architect, Contractor shall remove all excess, unused existing on-site loam from the site and dispose of it in a legal manner.

- N. The contractor shall install erosion control matting where required on the drawings and specified under Section 32 92 00 – Turf and Grasses.

3.3 SAND BASED STRUCTURAL SOILS, AERATION PIPES AND GRATES

- A. Install sand based structural soils, aeration pipes and grates in accordance with the Detail where indicated on the drawings.
- B. Lay piping during placement of the sand based structural soil and compact to 92-95% carefully to avoid damage to pipes and fittings.

- C. Install base course and surface pavements in coordination with setting the aeration grates within the finish paving design. Secure grates to the top of pipe risers to be flush with finish grade.

3.4 ACCEPTANCE

- A. Confirm that the final grade of the loam borrow is at the proper finish grade elevations. Adjust grade as required to meet the contours and spot elevations noted on the Plans. Request the presence of the Architect to inspect final grade. Do not proceed with the remaining work of this Contract until the Architect has given his/her written approval of the final grade.

END OF SECTION

**SECTION 32 92 00
TURF AND GRASSES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:
 - 1. Seeding
 - 2. Installation of erosion control blanket
 - 3. Maintenance
 - 4. Inspection and acceptance
 - 5. Cleaning and protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 16 00 – Asphalt Paving
 - 6. Section 32 13 13 – Concrete
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 91 00 – Loam and Planting Preparation
 - 9. Section 33 40 00 – Storm Drainage Utilities
- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.
 - 1. The planting subcontractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 SUBMITTALS

- A. Material Samples and testing:
 - 1. Provide full analysis of existing on-site loam, and off-site loam source from a laboratory that has been approved in writing by the Architect. Sampling and testing shall be as specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

2. Provide manufacturers' certified analysis for soil amendments and fertilizers to meet the requirements of this Section, Turf and Grasses.
3. Provide certified analysis for seed mixtures required including percentages of purity, germination and weed seed.
4. Provide organic pre-emergent weed treatment product and safety data, application rates.

1.05 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer and pesticide applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Architect at least two (2) weeks prior to scheduled date of application.

1.06 QUALITY ASSURANCE

- A. All work shall be performed by experienced landscape professionals familiar with planting procedures and under the full-time supervision of a qualified foreman.
- B. Analysis of Materials: For each type of packaged material required for the work of this Section, provide manufacturers' certified analysis.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials in manufacturer's original unopened containers showing weight, analysis and name of manufacturer. Comply with manufacturer's instructions and recommendations for storage and handling. Protect all materials from damage, deterioration, injury and theft while stored at the site.

1.08 EXAMINATION OF CONDITIONS

- A. All areas to be seeded shall be inspected by the Contractor prior to starting work and any incorrect grading or inadequate drainage shall be reported to the Architect prior to beginning work.

PART 2 - PRODUCTS

2.01 LOAM

- A. Loam for lawns shall be approved, specified, provided, and installed under the work of Section 32 91 00, Loam and Planting Preparation, and loam amendments required by the test results and the work of this Section including but not limited to humus, fertilizers and limestone shall be applied separately at the required rates to the rough graded loam and shall be thoroughly and evenly incorporated to the full depth of the in-place loam. Apply approved limestone in sufficient quantity to bring the acidity of the loam to pH 6.5.

2.02 SOIL ADDITIVES

- A. Soil additives shall be specified, provided, and installed under the work of Section 32 91 00 Loam and Planting Preparation.

2.03 SEED

- A. Seed Material: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination establish by Official Seed Analysis of North America. Seed shall be

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composed of the following varieties that shall be mixed in the proportions stated and shall test to minimum percentages of purity and germination. Deliver seed in fully labeled, standard, sealed containers. Seed that has become wet, moldy, or otherwise damaged, will not be accepted.

- B. Seed, General Lawn, shall have the following seed mixture composition that is suitable for dense shade:

<u>Common Name</u>	<u>Proportion By Weight</u>	<u>Percent Purity</u>	<u>Percent Germination</u>
Hard Fescue	25%	95%	90%
Shee Fescue	25%	95%	90%
Chewing Fescue	25%	95%	90%
Creeping Fescue	25%	95%	90%

1. All varieties shall be within the top 50 percent and 25 percent respectively, of varieties tested in National Turfgrass Evaluation Program, or currently recommended as low maintenance varieties by University of Massachusetts or the University of Rhode Island.
2. Seeding rate for the seed mix shall be 6 pounds per 1,000 square feet.
3. Seed used for overseeding as specified herein shall be Perennial Ryegrass having 95% purity and 90% germination.

2.04 FERTILIZERS

- A. Fertilizer shall be a commercial product complying with the State and United States fertilizer laws. Deliver to the site in the original unopened containers that shall bear the manufacturer's certificate of compliance covering analysis. Fertilizer shall contain not less than the percentages of weight of ingredients as recommended by the soil analysis.
- B. Nitrogen fertilizer shall be slowly soluble ureaformaldehyde, methylene urea, or isobutylidene diurea; or slow release sulfur-coated urea.
- C. Phosphorus shall be superphosphate or triple superphosphate.
- D. Potassium shall be sulfate of potash, K₂SO₄.
- E. Salt indexes per unit of nutrient for nitrogen, phosphorous, and potassium shall be less than 1.0 when compared to sodium nitrate (6.3).

2.05 LIMESTONE

- A. Ground limestone for adjustment of loam borrow pH shall contain not less than 85 percent of total carbonates and shall be ground to such fineness that 40 percent will pass through 100 mesh sieve and 95 percent will pass through a 20 mesh sieve. Contractor shall be aware of loam borrow pH and the amount of lime needed to adjust pH to specification in accordance with testing lab recommendations.

2.06 WATER

- A. Water: shall be furnished by the Contractor from a legal off-site source via water truck and be suitable for irrigation, free of toxic ingredients. Sources of water at or near the

site that are made available to the Contractor are a convenience to the Contractor. Limitations of site water sources shall be supplemented by off-site sources at the Contractor's expense to meet the maintenance requirements of this Section. Any municipal fees associated with providing water for this work shall be borne by the Contractor.

1. Watering Equipment: The Contractor shall furnish sufficient watering equipment to distribute water evenly with complete coverage daily to all seeded areas.

2.07 STRAW

- A. Straw for mulch at seeded areas shall be mowings of acceptable herbaceous growth reasonably free from noxious weeds or woody stems and shall be reasonably dry. No salt hay shall be used.

2.08 WOOD FIBER MULCH

- A. Wood Fiber Mulch: shall be derived from natural, clean, whole woodchips. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard fiber. It shall be dyed green to contrast with the soil on which it is to be applied. Fiber shall have a water holding capacity of not less than 31.5 ounces of water per 3.5 ounces of fiber. The rate of application for wood fiber mulch shall be in accordance with manufacturer's guidelines.

2.09 EROSION CONTROL MAT

- A. The erosion control blanket shall be a machine-produced mat of 100% agricultural straw matrix. The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with lightweight photodegradable polypropylene netting having an approximate 0.50 x 0.50 inch (1.27 x 1.27 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers (50 stitches per roll width) with degradable thread. The blanket shall be manufactured with a colored line or thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) to ensure proper material overlapping. The straw erosion control blanket shall be S150 as manufactured by North American Green, or Architect approved equal. The erosion control blanket shall have the following properties:

1. Material Content:

Matrix	100% Straw Fiber (0.50 lb/yd ²) (0.27 kg/m ²)
Netting	Both sides lightweight photodegradable (1.64 lbs/1,000 ft ² [0.80 kg/100m ²] approximate weight)
Thread	Degradable

2. Physical Specifications (per roll):

	English	Metric
Width	6.67 ft	2.03 m
Length	108.00 ft	32.92 m
Weight	40.00 lbs ± 10%	18.14 kg
Area	80.00 yds ²	66.89 m ²

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Stitch Spacing 1.50 inches 3.81 cm

3. Furnish and install erosion control mat on all seeded areas of 3:1 or greater in slope and in all vegetated swales.

2.10 HERBICIDES, CHEMICALS AND INSECTICIDES

- A. Provide chemicals and insecticides as needed for fungus or pest control. All chemicals and insecticides shall be approved by the Massachusetts Department of Food and Agriculture for the intended uses and application rates.
- B. Provide post emergent crab grass control throughout the maintenance period to ensure a germinated and mown lawn free of crab grass.

PART 3 - EXECUTION

3.00 GENERAL

- A. All areas within the Limit of Work lines not required to be otherwise developed shall be seeded as shown in the Contract Documents. The Contractor shall restore all lawn areas disturbed because of this Contract with specified loam and seed, as directed by Owner, whether within or outside the Limit of Work line.

3.01 PREPARATION OF SUBGRADE AND SPREADING OF LOAM

- A. Preparation of subgrade and spreading of loam shall be specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

3.02 FINE GRADING

- A. Fine grading shall be specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

3.03 SEEDING

- A. Contractor shall obtain Landscape Architect's written approval of fine grading and be preparation before doing any seeding work.
- B. Seeding shall be done immediately after fine grading provided the seedbed has remained in a friable condition and has not become muddy or hard. If it has become hard, it shall be tilled to a friable condition and fine graded again.
- C. The season for seeding shall be from April 1 to June 15 and from August 15 to October 15. The actual planting of seed shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and by accepted practice in this locality. To prevent loss of soil via water and wind erosion and to prevent the flow of sediment, fertilizer, and pesticides onto roadways, sidewalks, and into catch basins, seed loam areas within 5 Days of spreading the loam.
- D. Sow seed using a spreader or hydroseeder. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity of seed specified or scheduled. Apply seed at one half the rate in two directions at right angles to each other. Roll the seeded areas lightly and water with a fine spray.
 - 1. After the grass has germinated, all areas and parts of areas that fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such

areas and parts of areas shall be reseeded repeatedly until all areas are covered with a uniform germination.

2. Install straw mulch at areas seeded by spreader and cellulose fiber mulch at areas seeded by hydroseeder. Install mulch immediately after fine grading topsoil and seeding.
3. Sow seed using a spreader in lawn areas directly adjacent to building structures as an alternative to Hydroseeding in these areas.

E. Seeding of lawn shall be by Hydroseeding Method specified as follows:

1. Prior to the start of work, furnish a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of hydroseeding that can be covered with the quantity of solution in the hydroseeder.
2. Hydroseed with wood cellulose fiber mulch at a rate of 46 pounds per 1,000 square feet or 2000 pounds per acre.
3. For the hydroseeding process, a mobile tank with a capacity of at least 500 gallons shall be filled with water and the mixture noted above in the specified proportions. The resulting slurry shall be thoroughly mixed by means of positive agitation in the tank. Apply the slurry by a centrifugal pump using the hose application techniques from the mobile tank. Only hose application shall be permitted. At no time shall the mobile tank or tank truck be allowed onto the prepared hydroseed beds. The hose shall be equipped with a nozzle of a proper design to ensure even distribution of the hydroseeding slurry over the area to be hydroseeded and shall be operated by a person thoroughly familiar with this type of seeding operation.

3.04 LAWN MAINTENANCE

- A. Maintenance shall begin immediately after any area is seeded and shall continue for a minimum of 60 days during the active growing period for seeded areas or until Final Acceptance, whichever is longer.
- B. Following the completion of all lawn construction work, and until final acceptance of the project. In the event that seeding operations are completed too late in the Fall for adequate germination and growth of grass, then maintenance shall continue into the following Spring for the minimum 60 Day period.
- C. Maintenance shall consist of watering, weeding, mowing, repair of ruts and erosion, repair of protective devices and reseeding.
 1. Weed treatment: At low mow fescue lawns that were seeded the previous fall, a pre-emergent herbicide application is required in early spring. A post-emergent shall also be applied in late spring.
- D. Watering: The Contractor shall include in his base bid costs for daily and, if necessary, continuous watering of all grass areas during a normal eight hour working day to maintain the seed bed in a continuous moist condition satisfactory for good germination and turfgrass development. Control weeds as necessary to maintain grass at 98% weed free.

- E. Maintenance shall include all temporary protection fences, barriers and signs and all other work, tools and equipment incidental to proper maintenance.
- F. The Contractor shall be responsible for all maintenance of lawns necessary to establish a uniform germination of the specified grasses.
- G. Mowing and Edging:
 - 1. The Contractor shall keep all lawns mowed until Acceptance of the contract by cutting to a height of 2 inches when growth reaches 3 inches or as directed by the Landscape Architect.
 - 2. At each mowing, all edges of walks, drives, plant beds and other border conditions shall be edge trimmed by hand or machine to produce straight and uniform edge conditions.
 - 3. Remove and discard from paved areas only clippings and debris generated by each mowing and edging operation legally off-site. Landscape Architect, if practical and aesthetic, may allow sweeping (not blowing) clippings back into grass. Mowers shall be equipped with mulching blades. Do not remove from grass areas any clippings that have been generated by mowing operations. Do not mow grass when wet.
- H. Fertilizing at General Lawn seeded areas: The first application of fertilizer is specified, provided, performed and paid for under the Section 32 91 00, LOAM AND PLANTING PREPARATION. A second application of fertilizer shall be applied to seeded areas at the time of the first mowing and shall be performed and paid for under this section, TURF AND GRASSES. This second application shall be applied at a rate that ensures that one-half pound of nitrogen is applied per 1,000 square feet. Phosphorus and potassium shall be applied proportionally in accordance with the recommendations of the soil tests and the quantities previously integrated into the soil during the first application. A third application of nitrogen fertilizer shall be applied to seeded areas approximately two months after the second application and shall be paid for under this section, TURFS AND GRASSES. This third application shall correspond to the following application rates dependent upon the month of application.
 - 1. May 1-15: Apply 1.0 pound of nitrogen per 1,000 square feet.
 - 2. June 15-30: Apply 1.0 pound of nitrogen per 1,000 square feet.
 - 3. August 15 through September 15: Apply 1.0 pound of nitrogen per 1,000 square feet.
 - 4. November 1-15: Apply 1.5 pounds of nitrogen per 1,000 square feet.

Nitrogen fertilizer shall be composed of 50 percent slowly soluble or slow release nitrogen fertilizer.

3.05 LAWN REVIEW AND ACCEPTANCE

- A. At the end of the maintenance period, seeded areas shall have a close stand of grass as defined above with no weeds present and no bare spots greater than 3 inches in diameter over greater than 5 percent of the overall seeded area. At least 90 percent of the grass established shall be permanent grass species. If seeded areas are deficient, the Contractor's responsibility for maintenance of all seeded areas shall be extended until deficiencies are corrected. Seeded areas to be corrected shall be prepared and reseeded in accordance with the requirements of this Section, TURF AND GRASSES.
- B. At the time of acceptance, the Contractor shall remove temporary barriers used to protect lawn areas.

- C. The Architect shall review the lawns upon written request by the Contractor. The request shall be received at least ten days before the anticipated date of review.
- D. The conditions of lawns will be noted and determination made by the Architect whether maintenance shall continue in any part. When acceptance is made in writing to the Contractor, the Contractor's responsibility for maintenance of lawns or parts of lawns shall cease.
- E. Areas of lawn not meeting the criteria for establishment specified herein will be noted. Remedial work and maintenance shall continue until the lawn is accepted by the Owner.

3.06 CLEANING AND PROTECTION

- A. During operations, keep pavements clean and work area in an orderly condition. Protect lawns from damage by other contractors and trades and trespassers. After completion of the work, the Contractor shall remove all debris, materials, rubbish, excess dirt, etc. from the site and dispose of them in a legal manner. The premises shall be left clean and presentable to the satisfaction of the Architect.

END OF SECTION

SECTION 33 40 00
STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:

- 1. High Density Polyethylene pipe and fittings (HDPE)

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:

- 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 16 00 – Asphalt Paving
 - 6. Section 32 13 13 – Concrete
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 91 00 – Loam and Planting Preparation
 - 9. Section 32 92 00 – Turf and Grasses

- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

- 1. The Contractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 Submittals

- A. Refer to Division 1, for submitted provisions and procedures.
 - 1. Product Data: Submit manufacturer's technical product data and installation instructions for storm drain system materials and products. Descriptive literature showing pipe dimensions, pipe and joint materials and dimensions, and other details for each class or type of pipe or product to be furnished for this contract. All pipe furnished under the contract shall be manufactured in accordance with these Specifications.

1.05 Interpretation of Drawings

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.
- C. All work shall be performed to the true intent and purpose of the drawings and all necessary parts to make complete, approved working systems ready for use, shall be furnished without extra charge.

1.05 Obtaining Information

- A. Obtain from the manufacturer the proper method of installation and connection of the equipment that is to be furnished and installed. Obtain all information that is necessary to facilitate the work and complete the project.

PART 2 - PRODUCTS

2.01 Corrugated Polyethylene Pipe

- A. General: Provide pipes of the following materials of class indicated. Provide pipe fittings and accessories of same materials and class as pipes with joining method, as indicated. The piping shall be manufactured by an established manufacturer of good reputation in the industry and in a permanent plant adapted to meet all the design requirements of the pipe.
 - 1. Corrugated perforated polyethylene pipe shall have an interior surface that is smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind. Pipe shall conform to AASHTO M-294, AASHTO M252, or AASHTO MP6, Type S depending on the diameter of the pipe required.
 - 2. Pipe and fittings shall be high-density polyethylene meeting the requirements of ASTM D3350.
 - 3. Pipe shall be installed with a minimum 12-inch cover for AASHTO H-20 loading.
- B. Joints on Corrugated Polyethylene Pipe.
 - 1. Corrugated polyethylene pipe and fittings shall be jointed with coupling devices made by the same manufacturer as the piping and of the same material specified for the piping.
 - 2. Coupling bands or external snap couplings shall cover a minimum of one full corrugation in each section of pipe to be joined. Couplings shall have neoprene gaskets to minimize soil infiltration.
 - 3. Pipe entrances at structures shall be made with a mortar made with Type II cement. Mortar

mixture shall follow instructions provided by cement manufacturer.

4. Watertight joints shall be provided when indicated on the Contract Drawings.

2.02 Filter Fabric

- A. Filter Fabric used shall conform to Section 31 90 00-Excavation, Filling and Grading.

2.03 Crushed Stone

- A. Crushed Stone used shall conform to Section 31 90 00-Excavation, Filling and Grading.

2.04 DRAIN COUPLINGS

- A. Drain Couplings shall be pressure rated at least equal to that of the pipe. The coupling sleeve, shall be 1/4-inch minimum thickness elastomeric polyvinylchloride with a minimum tensile strength of 1500 psi. The sleeve shall fit snugly onto the pipe to be joined and be resistant to common chemicals present in storm water. Adjustable pipe clamps shall consist of a slotted band that mate with the worm gear screw and a screw housing all manufactured of stainless steel, and suitable for underground service.

2.05 CLEANOUTS

- A. General: Provide cast-iron ferrule and countersunk brass cleanout plug, with round cast-iron access frame and heavy-duty, secured, scoriated cast-iron cover.
- B. The drain cleanouts shall be minimum 6-inch diameter or sized to match the service pipe, whichever is greater. The cleanout shall be complete with a flush mount over. The cleanout cover shall be clearly marked "DRAIN" and shall be minimum eight inches in diameter or two inches greater than the cleanout size, whichever is greater. Cleanouts shall include a watertight cap.

PART 3 - EXECUTION

3.01 General Requirements

- A. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting same.
- B. Carefully store materials and equipment that are not immediately installed after delivery. Close open ends of work with temporary covers or plug during construction to prevent entry of obstructing material.
- C. Any defective pipe, fitting or drain apparatus that is discovered after it has been installed or has been installed improperly, shall be removed and replaced with non-defective parts to the satisfaction of the Landscape Architect at the Contractor's expense.

- D. Trenches shall be kept free of water and as dry as possible during the installation of the bedding material, pipe and jointing for as long a period as required. Pipe shall not be laid in water or when trench conditions are unsuitable for the work.
- E. No backfilling shall take place, unless otherwise ordered by the Landscape Architect, until the inspection has been completed.
- F. Excavation, backfill and pipe bedding material shall be in accordance with Section 31 00 00 Excavation, Filling and Backfill.

3.02 Installation of Corrugated Polyethylene Pipe and Pipe Fittings

- A. General: Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.
- B. Pipe Storage: Pipe sections shall not be stored on areas over the newly placed pipe or other pipelines which might be damaged by the superimposed load, and storage sections shall be restricted to approved areas.
- C. Handling Pipe: The Contractor will be required to furnish suitable devices to permit satisfactory support of all parts of the pipe unit when it is lifted.
- D. Placing Pipe: Except where a concrete cradle or envelope is required, the pipe shall be placed in a crushed stone cradle. In trenches, no blocking or supporting of the piping by concrete, stones, bricks, wooden wedges, or method other than bedding the pipe on crushed stone will be permitted. Each length of pipe shall be shoved home against the pipe previously laid and held securely in position. Joints shall not be "pulled" or "cramped".
- E. Jointing Pipe: After the pipe are aligned in the trench and are ready to be jointed, all joint surfaces shall be cleaned.
- F. Alignment and Placement: All pipe shall be placed with extreme care as to grade and alignment. Each pipe shall be so placed as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.
 - 1. Stakeout of drain work and setting of line and grade is the responsibility of the Contractor.
- G. Cleaning: Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water, and debris from entering any existing Drain.
 - 1. Place plugs in end of uncompleted conduit at end of day or whenever work stops.
 - 2. Flush lines between manholes to remove collected debris.
- H. Review of Completed Corrugated Polyethylene Pipe System: If the visual observation of the completed drain or any part thereof shows any pipe, manhole, or joint to be of defective work or material the defect shall be replaced or repaired as directed. The visual observation shall be conducted by the Owner's representative and any defects shall be as identified by such. The Contractor shall coordinate and provide site access for the Owner.

3.03 Drain Couplings

A. Couplings which are factory manufactured shall be installed at all connections from existing pipe to proposed pipe unless the existing pipe is the same material as the proposed pipe and the bell and spigot end of the pipes to be connected are compatible and free from defects. All drain couplings shall be installed in accordance with the manufacturer's recommendations for the types of pipe to be connected.

3.04 Cleanouts

A. Install cleanouts and extensions from drain pipe to cleanout at grade as indicated on the Contract Drawings. Set cleanout frame and cover flush within concrete paving.

3.05 BACKFILLING

- A. General: Conduct excavation and backfill operations for structure and pipe installations in accordance with Section 312000 – EARTHWORK, local requirements, and the contract documents.
- B. Initial backfill shall be placed evenly on both sides of the pipe to distribute the load and not to cause movement or deflection of the pipe.

3.06 FIELD QUALITY CONTROL

- A. Testing: Perform testing of completed piping in accordance with local authorities having jurisdiction.
- B. Cleaning: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.
 - A. In large, accessible piping, brushes and brooms may be used for cleaning.
 - B. Place watertight plugs in ends of uncompleted pipe at end of day or whenever work stops. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe eliminated.
 - C. Flush piping between manholes to remove collected debris.
- C. Interior Inspection: If deemed necessary by the Owner's Representative, inspect piping to determine whether line displacement or other damage has occurred.
 - A. Make inspections after pipe between manholes has been installed and approximately 2 feet of backfill is in place, and again at completion of project.
 - B. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, the Contractor shall correct such defects and reinspect.

3.07 Drainage System Cleaning and Acceptance

- A. The new drainage system shall be cleaned by flushing all pipes with clean water and removal of debris from catch basins and drywells, prior to final review and acceptance by the Owner.
- B. The Contractor is responsible for coordinating and scheduling the inspection of the work by local jurisdictional authorities. No additional payment will be made for inspections and permits required in the performance of the work.

END OF SECTION

APPENDIX A

INSTALLATION INSTRUCTIONS FOR OWNER-SUPPLIED PLAY EQUIPMENT AND FURNISHINGS

FOOTINGS AND FOUNDATIONS FOR OWNER-SUPPLIED
PLAY EQUIPMENT AND FURNISHINGS SHALL CONFORM
WITH DETAILS IN THE CONTRACT DOCUMENTS.

	PAGES
PLAYWORLD - 5-12 MAIN PLAY STRUCTURE	2-299
PLAYWORLD - ARCH SWING SET WITH BELT AND BASKET GROUP SEATS	300-343
LSI - LOG CRAWL TUNNEL	344-345
LSI - LOG BENCH	346-347
LSI - COZY DOME	348-350
TRASH RECEPTACLE	351-352
BACKLESS BENCH	353-354
CURVED BENCH	355-356
BASKETBALL GOAL	357-364



Assembly View *(representative model)*

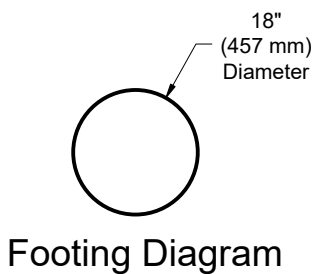
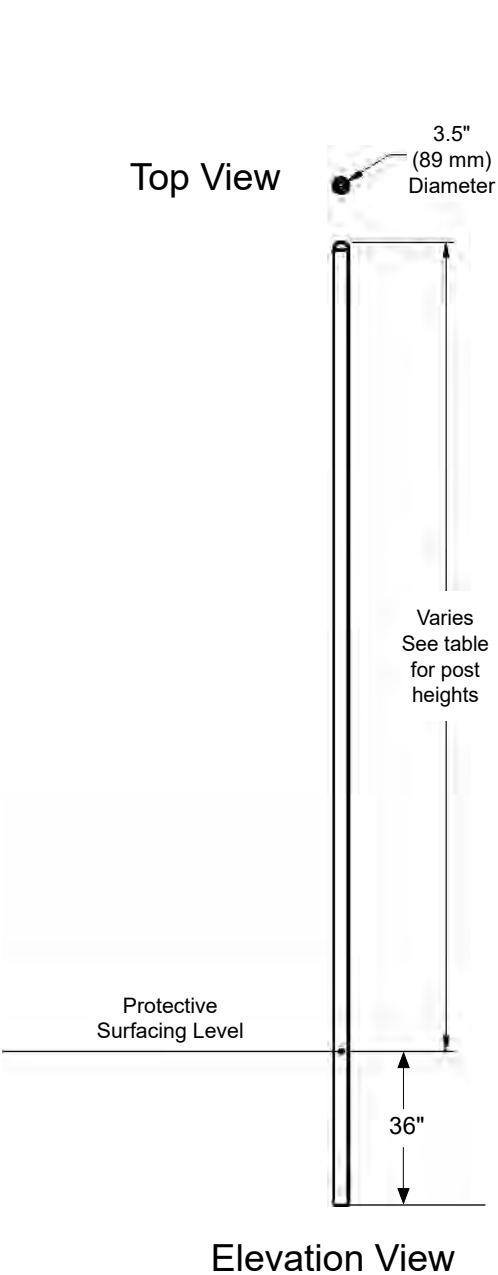
Installation Instructions

Challengers® Models CH0007, CH0009, CH0018,
CH0028, CH0038, CH0048, CH0058, CH0068,
CH0076, CH0256, CH0258
Steel Support Post w/ Cap
100 in. (2540 mm) to 224 in. (5690 mm)

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time: 1 man-hour
Concrete Required: 0.13 cubic yard (0,10 cubic meters)

Installation Instructions



Model	Post Height	Post Height above Surfacing
ZZCH0007	100" (2540 mm)	64" (1626 mm)
ZZCH0009	112" (2845 mm)	76" (1930 mm)
ZZCH0018	124" (3150 mm)	88" (2235 mm)
ZZCH0028	136" (3454 mm)	100" (2540 mm)
ZZCH0038	148" (3759 mm)	112" (2845 mm)
ZZCH0048	160" (4064 mm)	124" (3150 mm)
ZZCH0058	172" (4369 mm)	136" (3454 mm)
ZZCH0068	184" (4674 mm)	148" (3759 mm)
ZZCH0076	200" (5080 mm)	164" (4166 mm)
ZZCH0256	212" (5385 mm)	176" (4470 mm)
ZZCH0258	224" (5690 mm)	188" (4775 mm)



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Footing Details**.

__Step 4: Set the support post into excavated footings in accordance with placement called out on the footing diagram. The post should be placed on a perforated shipping tube cap or on another porous flat surface to prevent any buildup of moisture in the base of the post. Block the support post at the specified depth.

Note: Heights of the decks and play components are measured from the top of protective surfacing.

Final Details.

__Step 5: Plumb and level the support post. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

CH0007 - STEEL SUPPORT POST w/ CAP 100 in. (2540 mm)

PART NO.	DESCRIPTION	QTY.
CAP5036	POST - 3-1/2" O.D. x 100" STEEL w/ CAP & LBL AT 36"	1

CH0009 - STEEL SUPPORT POST w/ CAP 112 in. (2845 mm)

PART NO.	DESCRIPTION	QTY.
CAP5038	POST - 3-1/2" O.D. x 112" STEEL w/ CAP & LBL AT 36"	1

CH0018 - STEEL SUPPORT POST w/ CAP 124 in. (3150 mm)

PART NO.	DESCRIPTION	QTY.
CAP5040	POST - 3-1/2" O.D. x 124" STEEL w/ CAP & LBL AT 36"	1

CH0028 - STEEL SUPPORT POST w/ CAP 136 in. (3454 mm)

PART NO.	DESCRIPTION	QTY.
CAP5042	POST - 3-1/2" O.D. x 136" STEEL w/ CAP & LBL AT 36"	1

CH0038 - STEEL SUPPORT POST w/ CAP 148 in. (3759 mm)

PART NO.	DESCRIPTION	QTY.
CAP5044	POST - 3-1/2" O.D. x 148" STEEL w/ CAP & LBL AT 36"	1

CH0048 - STEEL SUPPORT POST w/ CAP 160 in. (4064 mm)

PART NO.	DESCRIPTION	QTY.
CAP5046	POST - 3-1/2" O.D. x 160" STEEL w/ CAP & LBL AT 36"	1

CH0058 - STEEL SUPPORT POST w/ CAP 172 in. (4369 mm)

PART NO.	DESCRIPTION	QTY.
CAP5048	POST - 3-1/2" O.D. x 172" STEEL w/ CAP & LBL AT 36"	1

CH0068 - STEEL SUPPORT POST w/ CAP 184 in. (4674 mm)

PART NO.	DESCRIPTION	QTY.
CAP5050	POST - 3-1/2" O.D. x 184" STEEL w/ CAP & LBL AT 36"	1

CH0076 - STEEL SUPPORT POST w/ CAP 200 in. (5080 mm)

PART NO.	DESCRIPTION	QTY.
CAP5052	POST - 3-1/2" O.D. x 200" STEEL w/ CAP & LBL AT 36"	1

CH0256 - STEEL SUPPORT POST w/ CAP 212 in. (5385 mm)

PART NO.	DESCRIPTION	QTY.
CAP0420	POST - 3-1/2" O.D. x 212" STEEL w/ CAP & LBL AT 36"	1

CH0258 - STEEL SUPPORT POST w/ CAP 224 in. (5690 mm)

PART NO.	DESCRIPTION	QTY.
CAP0422	POST - 3-1/2" O.D. x 224" STEEL w/ CAP & LBL AT 36"	1





Assembly View (representative model)

Model	Deck Height	Weight
ZZCH0296	12" (305 mm) to 24" (610 mm)	46.21 lbs. (21 kg)
ZZCH0297	36" (915 mm) to 48" (1219 mm)	52.81 lbs. (24 kg)

Installation Instructions

Challengers® Model CH0296 and CH0297
 12" (305 mm) to 24" (610 mm) Deck Access
 and 36" (914 mm) to 48" (1219 mm) Deck Access
 GroundZero® Post w/ Ladder

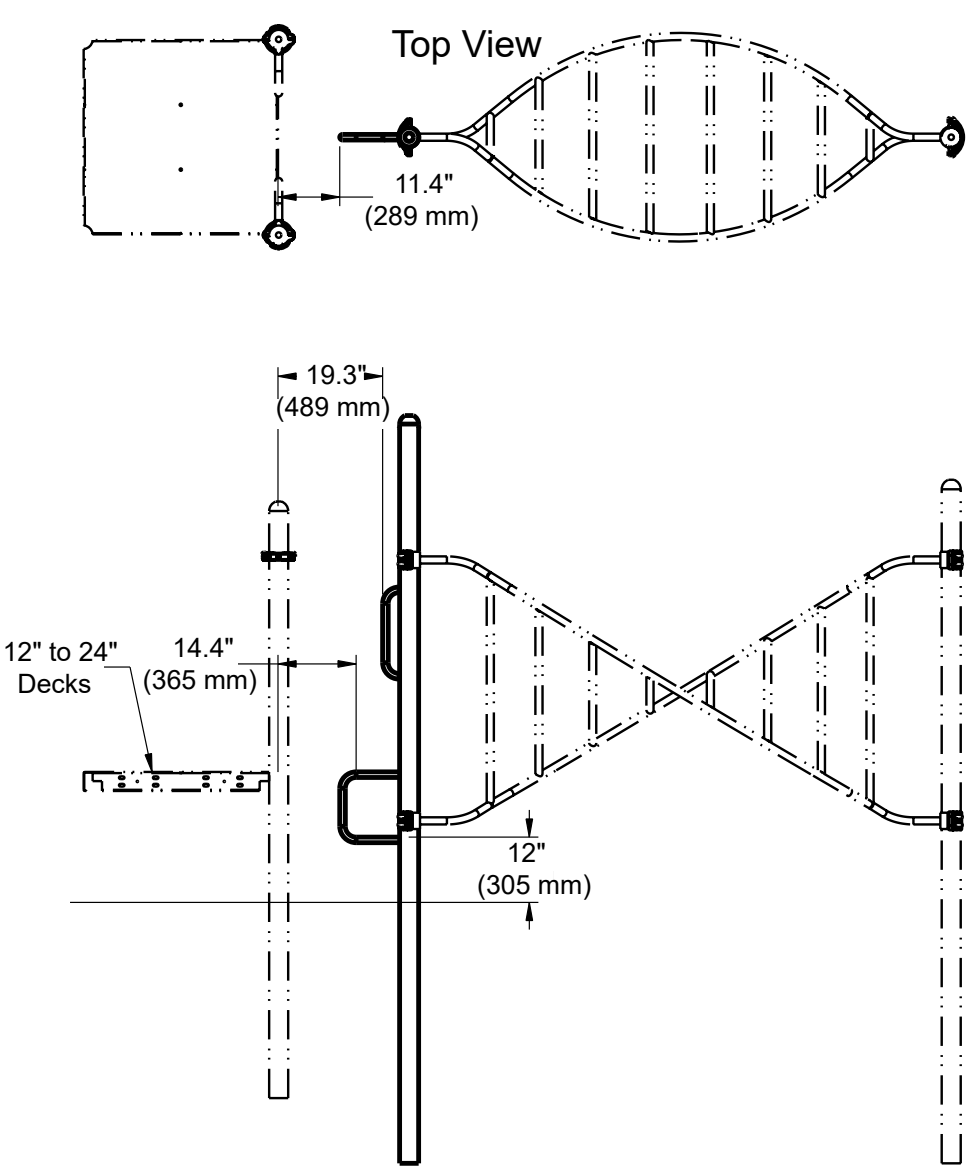
Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 man-hour
 Weight: (refer to table)
 Concrete Required: 0.18 cubic yard (0,13 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

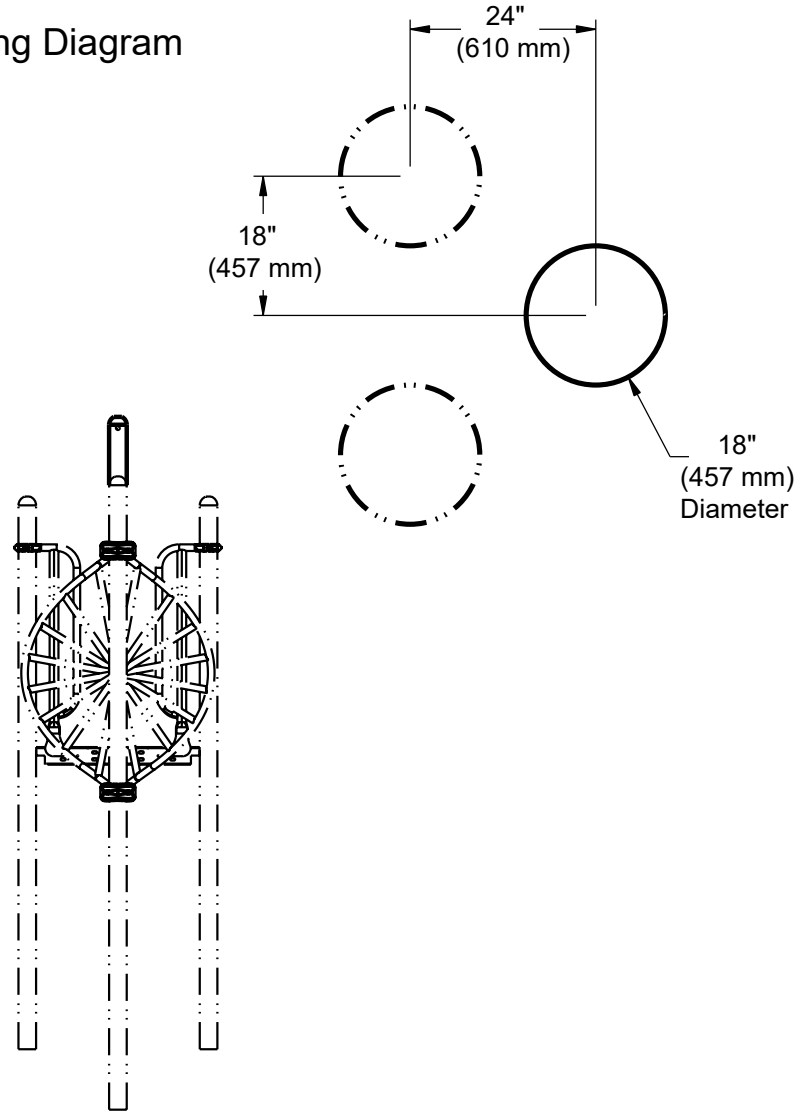
ICON KEY

	Fully Tighten Hardware		Add 1 Drop of Thread Locking Adhesive
	Do Not Fully Tighten Hardware		Pour Concrete
	Critical Fall Height		Dig Footing Holes

Installation Instructions



Footing Diagram



Elevation Views

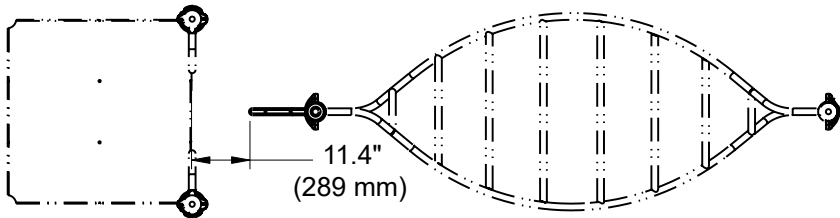


EN: 635 mm

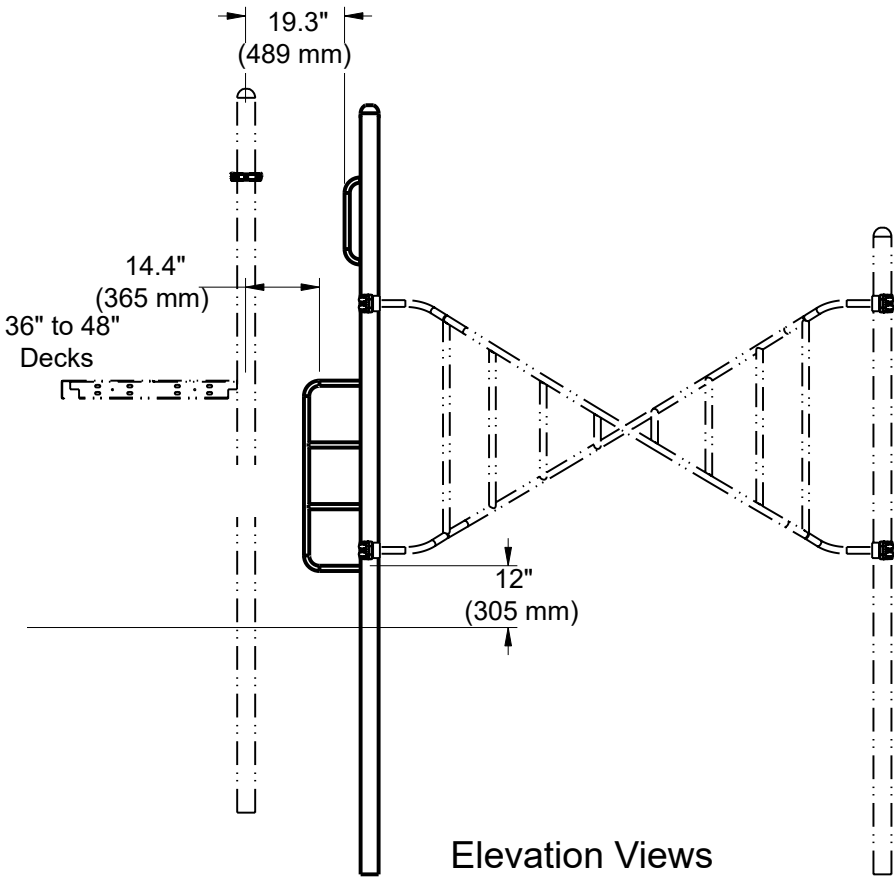
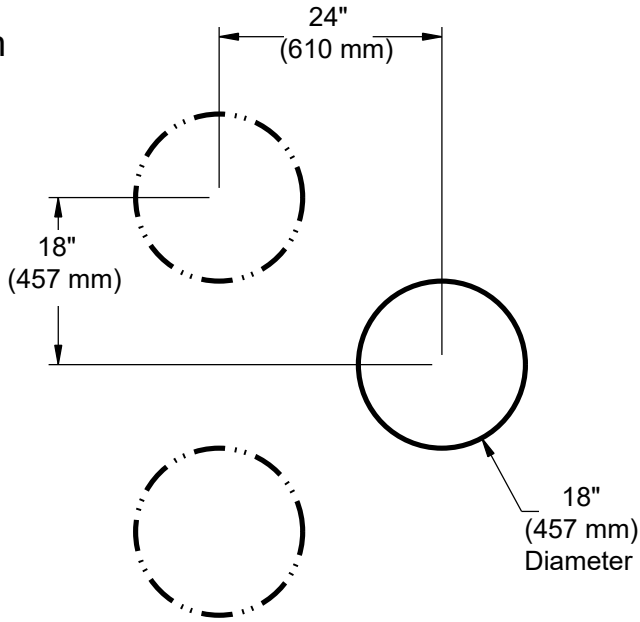


Installation Instructions

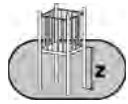
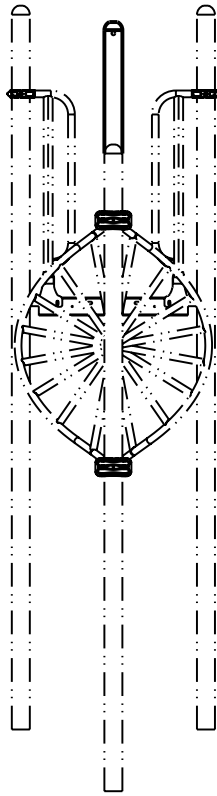
Top View



Footring Diagram



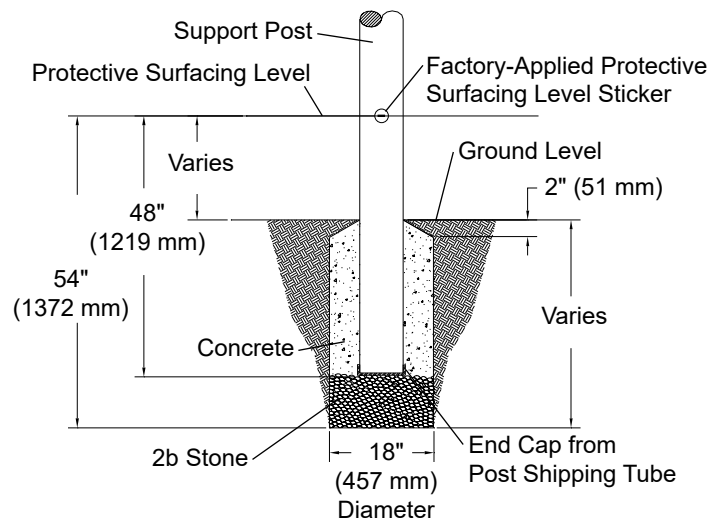
Elevation Views



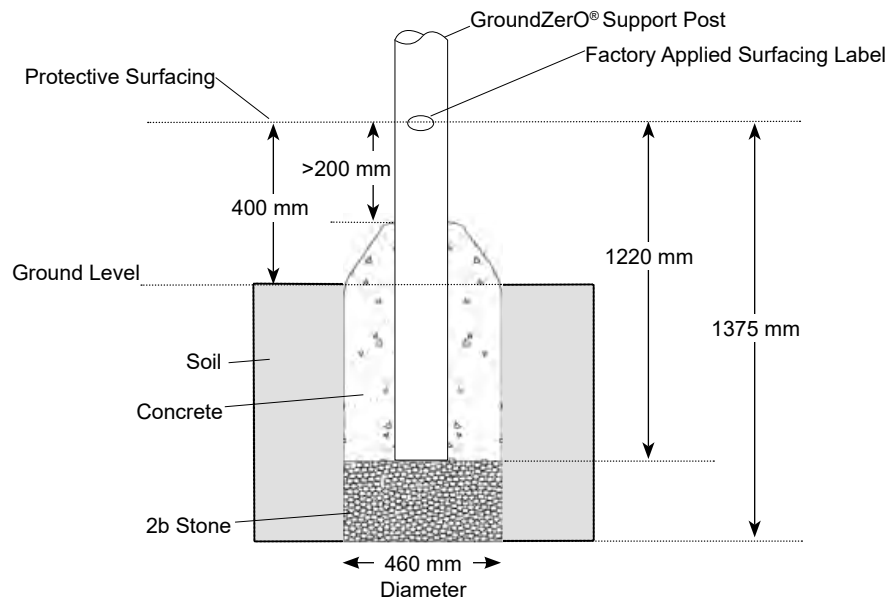
EN: 1219 mm



Installation Instructions



GroundZero® Support Post Footing Detail ASTM/CSA



Footing Detail GroundZero® Support Post (EN)

FOOTING NOTES

- Support post footing depth equals 54 in. (1372 mm) less the depth of the protective surfacing material. The post is designed to have 36" (914 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 42 in. (1067 mm).
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description.



Step 3



Step 5



Detail A
Step 4

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Footing Details**.

Place the support post in the prepared hole.

Step 4: Place the support post into the prepared hole. See **Detail A** and **Elevation View**. Select the support post. Place the post into the hole as shown in the **Elevation View**.

Important Note: Align the ladder to the deck as shown in the **Elevation View**.

Final Details.

Step 5: Plumb and level entire component. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Bill of Materials

CH0296 - 12 IN (305 mm) TO 24 IN (610 mm) GROUND ZERO POST WITH LADDER

PART NO.	DESCRIPTION	QTY.
CAP0040	POST - 3.50" O.D. x 136.00" w/CAP & LADDER (GZ)	1

CH0297 - 36 IN (914 mm) TO 48 IN (1219 mm) GROUND ZERO POST WITH LADDER

PART NO.	DESCRIPTION	QTY.
CAP0041	POST - 3.50" O.D. x 148.00" w/CAP & LADDER (GZ)	1



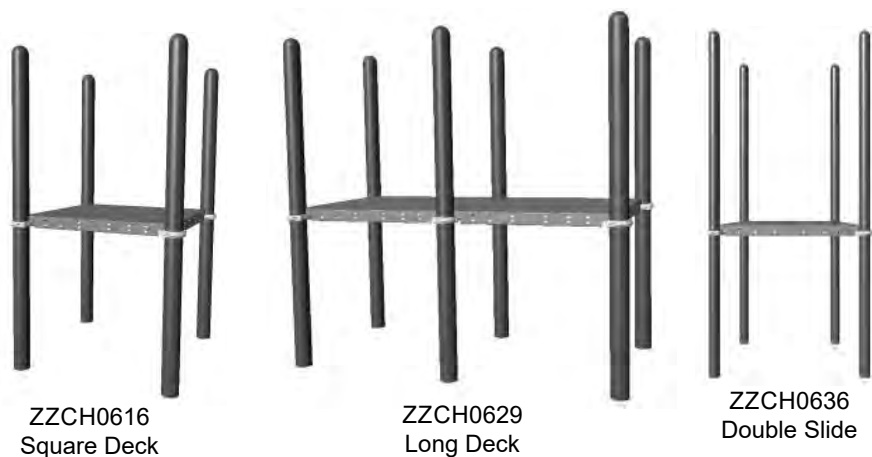
Installation Instructions

Challengers® Models CH0616, CH0629, and CH0636

Square, Long, and Double Slide Perforated Deck


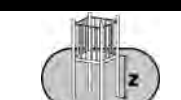

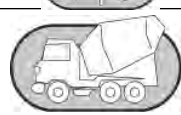



Installation Preparation

Recommended Crew (CH0616-36):..... Two (2) adults
 Recommended Crew (CH0629):..... Four (4) adults
 Installation Time (CH0616-36): 1 man-hour
 Installation Time (CH0629):..... 2 man-hours
 Use Zone:..... Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14



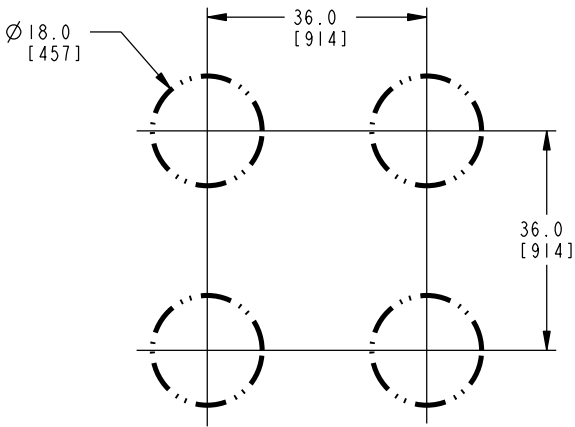
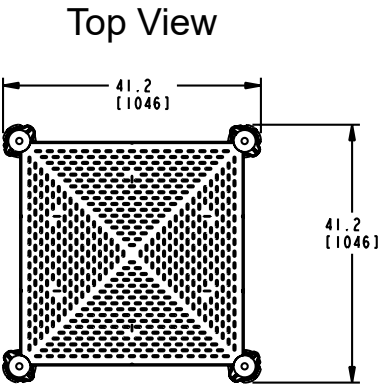
Assembly View

ICON KEY

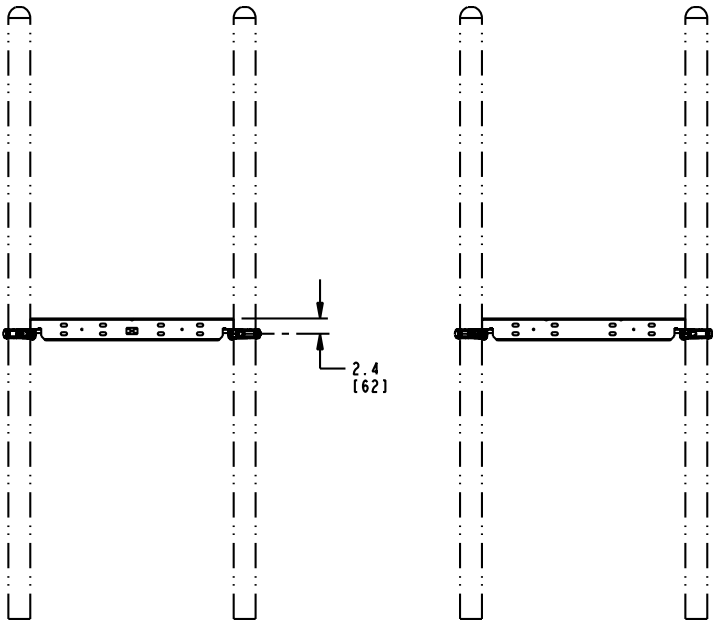
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

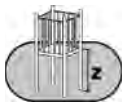
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation Views
CH0616



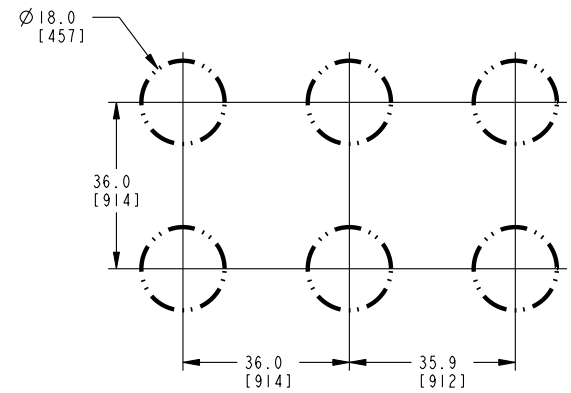
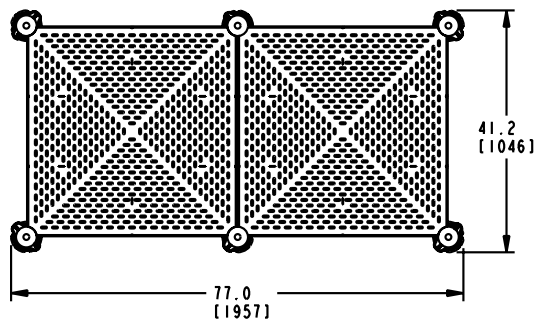
Equal to the height of the deck



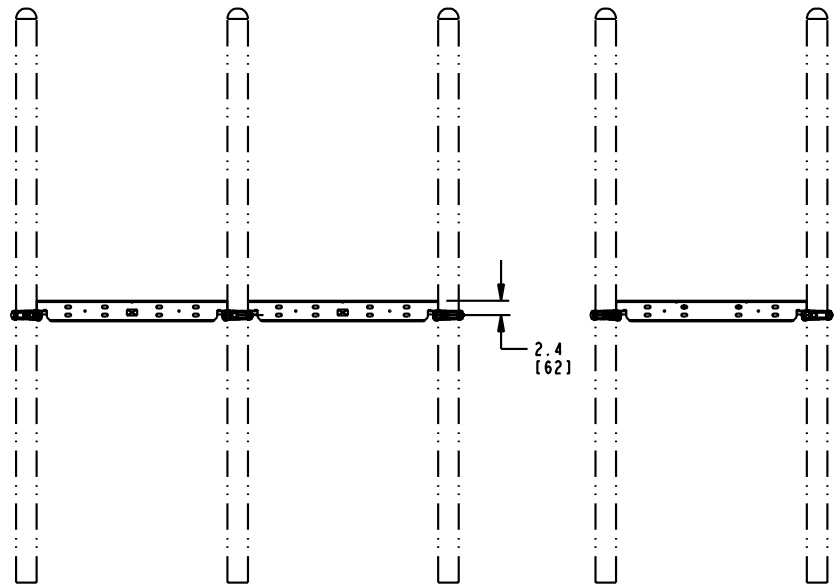
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram



Elevation Views
CH0629

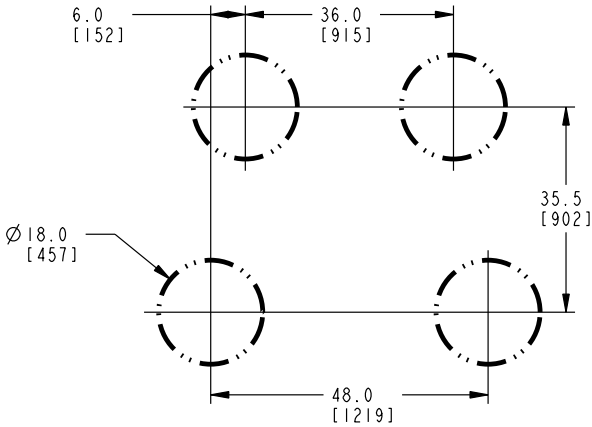
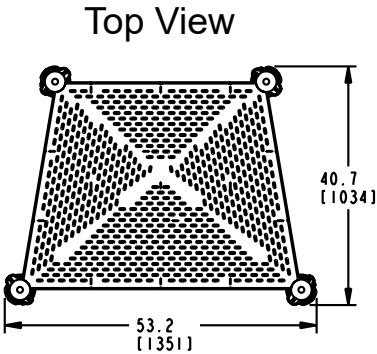


Equal to the height of the deck

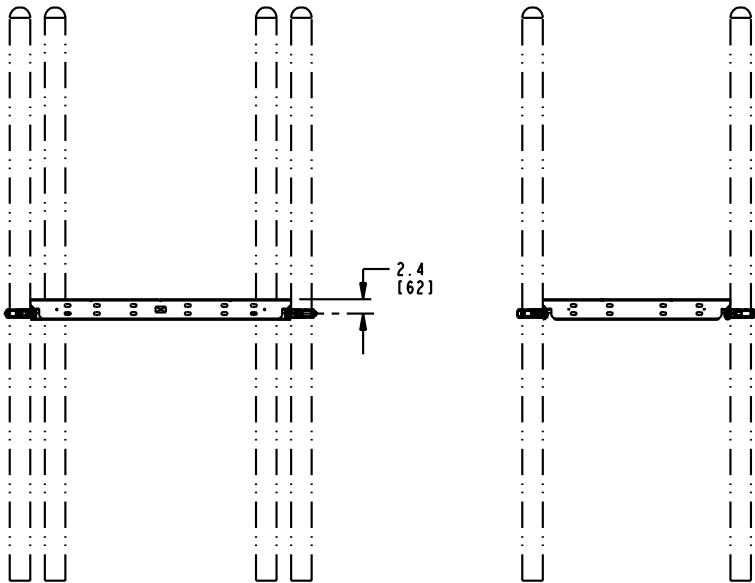


Installation Instructions

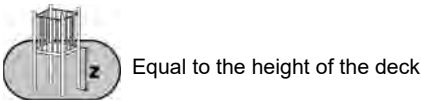
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram

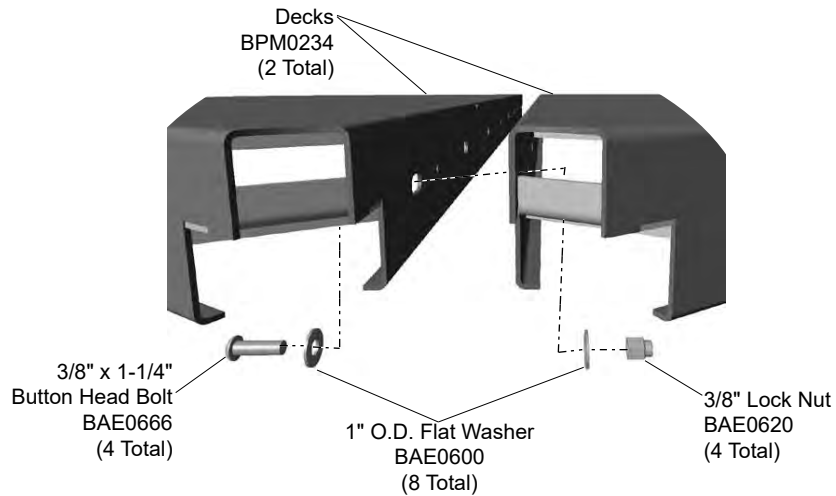


Elevation Views
CH0636

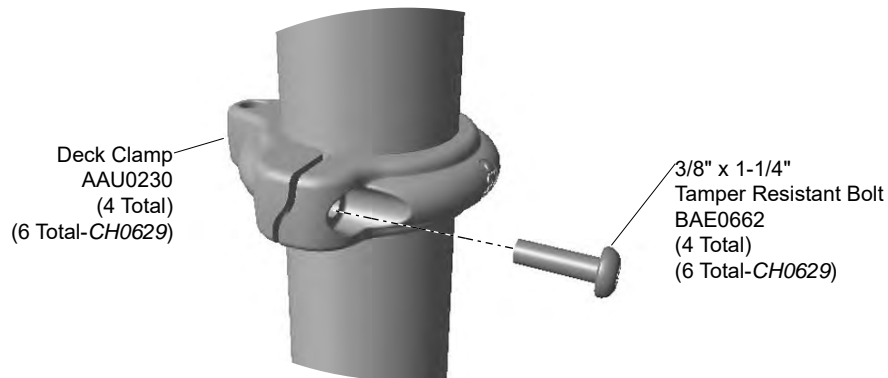


Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.

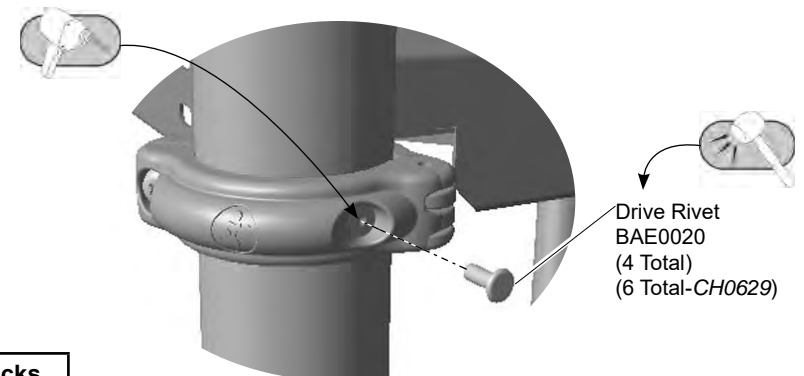
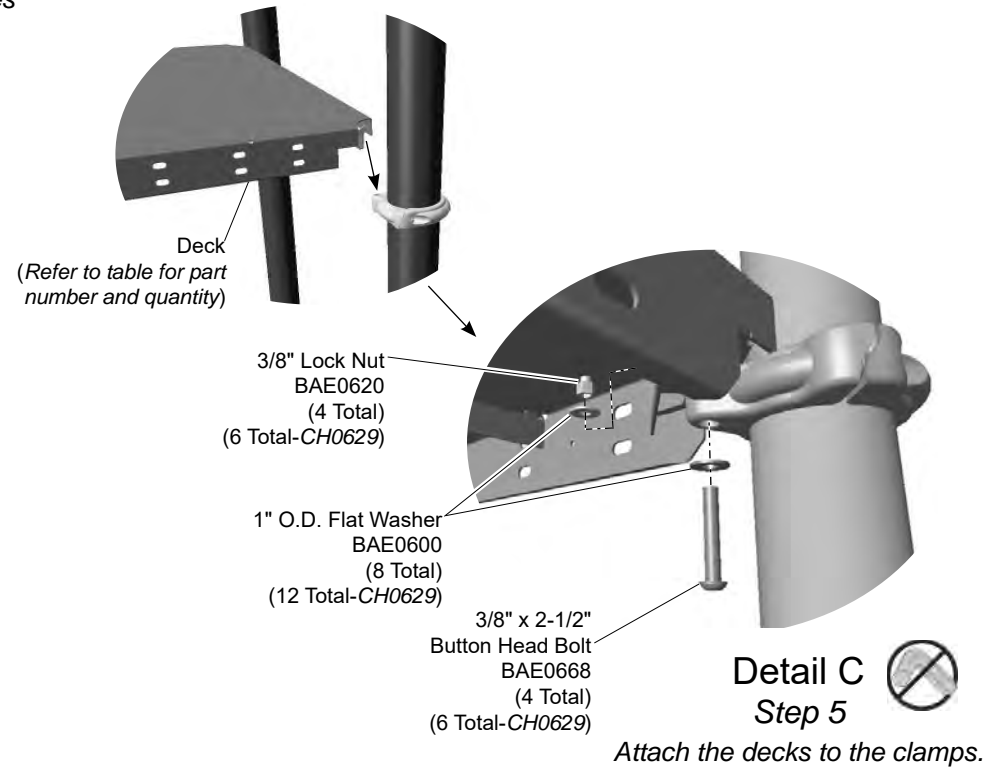


Detail A
Step 3
(Model CH0629 Only)
Attach the two decks together.



Detail B
Step 4
Attach the deck clamps to the support posts.

Model	Deck Part No.	No. of Decks
ZZCH0616	BPM0234	1
ZZCH0629	BPM0234	2
ZZCH0636	BPM0236	1



Detail D
Step 7
Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware. *Reference the master layout drawing at the beginning of the instruction booklet for location and heights of the decks.*

Step 3: *(Model CH0629 Only)* Attach the two decks together. **See Detail A.** Place both decks upside down on a flat surface. Match the long edges, align the holes, and attach as shown.

Step 4: Attach the deck clamps to the support posts. **See Detail B.** Position the clamps on the post at an appropriate height, and attach as shown. Ensure that all clamps are turned the same way, with deck connection inward.

Step 5: Attach the deck(s) to the clamps. **See Detail C.** Position the deck corners on top of the clamps and attach as shown.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 7: Install drive rivets. **See Detail D.** After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH0616 - SQUARE COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	4
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BPM0234	PLATFORM - CH SQUARE PERF	1

CH0636 - DOUBLE SLIDE PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	4
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BPM0236	PLATFORM - CH DOUBLE SLIDE PERF	1

CH0629 - LONG COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	6
BAE0020	RIVET - 1/4" x 11/16" DRIVE	6
BAE0600	WASHER - 1" O.D. FLAT	20
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	10
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	6
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	6
BPM0234	PLATFORM - CH SQUARE PERF	2



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Installation Instructions

Challengers[®] Models CH0618 and CH0619 Hex and Half Hex Coated Perforated Deck



ZZCH0618
Half Hex Deck




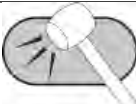
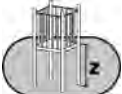




ZZCH0619
Hex Deck

Assembly View

Installation Preparation

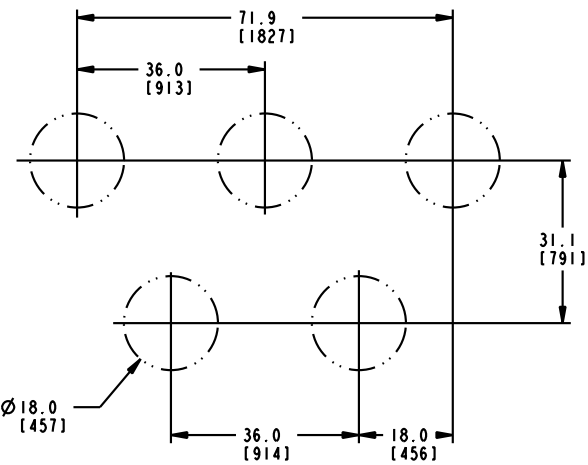
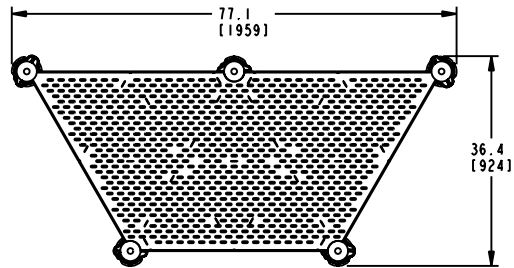
Recommended Crew: Two (2) adults
 Installation Time: 1.5 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY	
	Fully Tighten Hardware
	Do <u>Not</u> Fully Tighten Hardware
	Drill
	Hammer
	Critical Fall Height
	Pour Concrete
	Dig Footing Holes

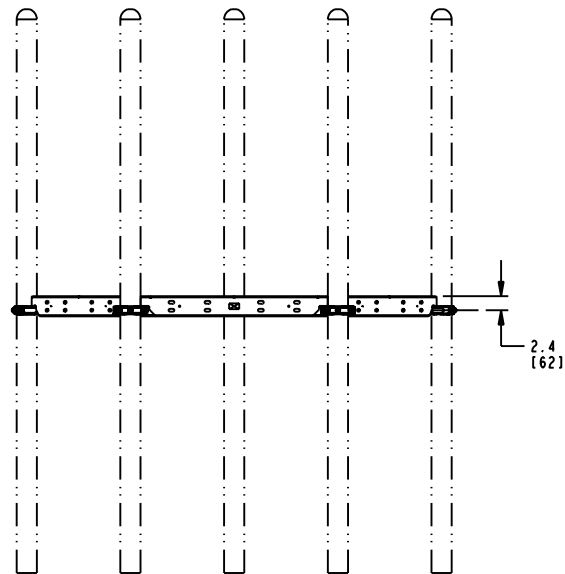
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

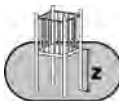
Top View



Footing Diagram



Elevation View
CH0618

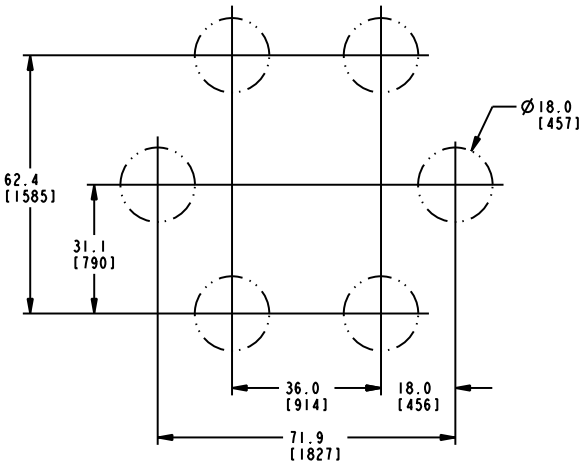
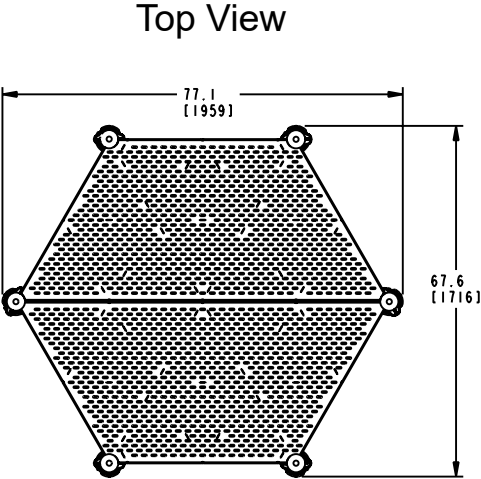


Equal to the height of the deck

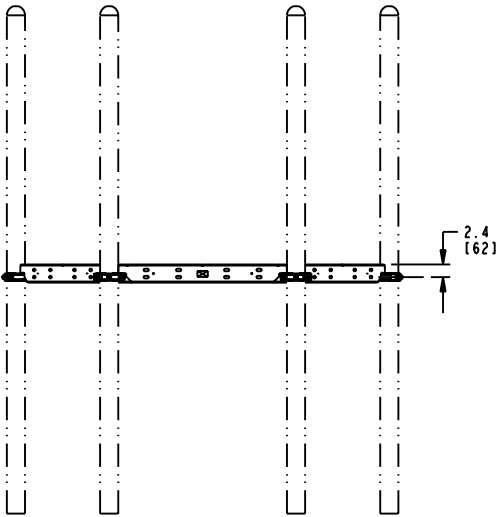


Installation Instructions

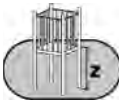
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation View
CH0619

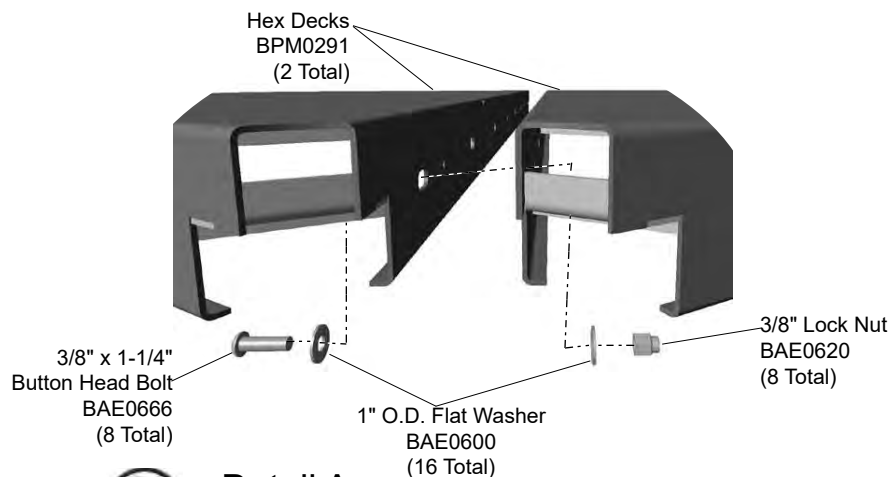


Equal to the height of the deck



Installation Instructions

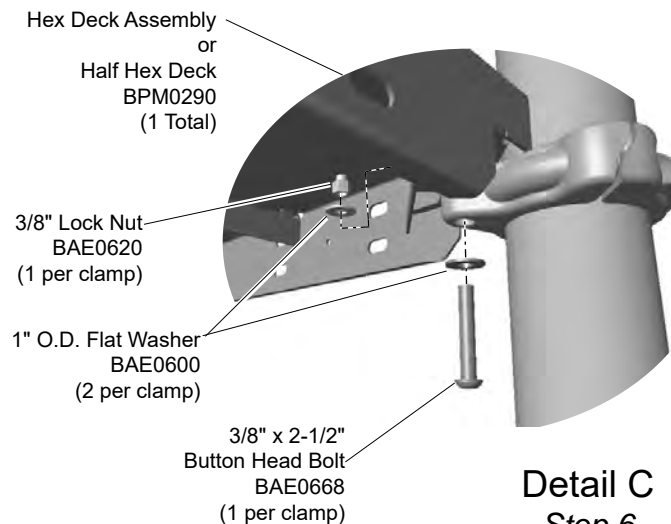
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A
Step 4

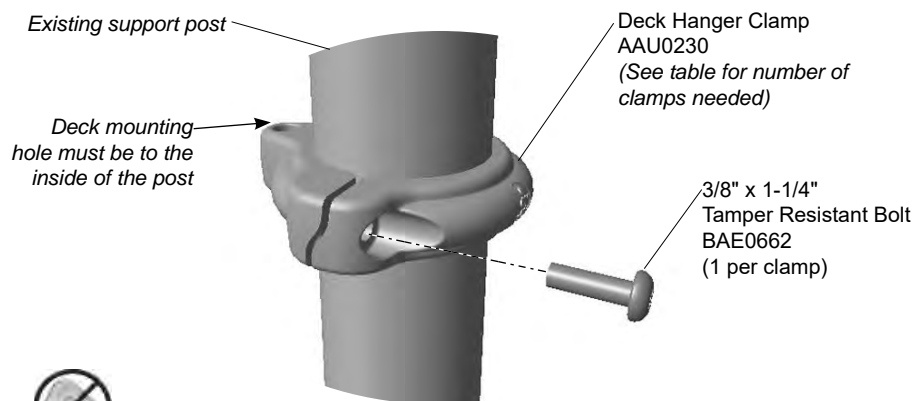
(Model CH0619 Only)

Attach the hex decks together.



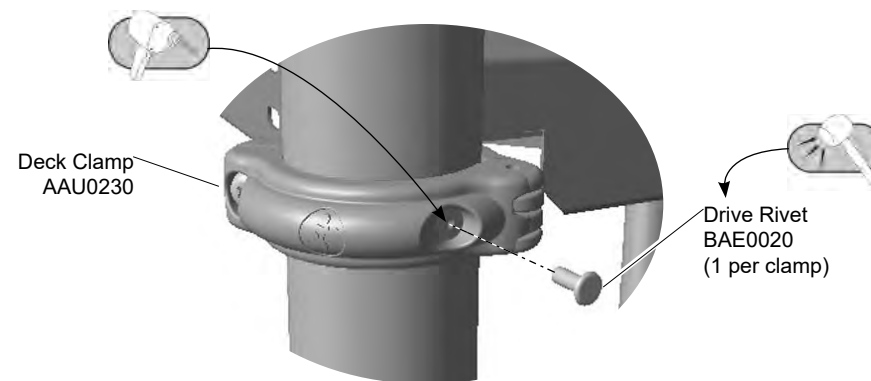
Detail C
Step 6

Attach the deck to the deck hanger clamps.



Detail B
Step 5

Attach the deck hanger clamps to the support posts.



Detail D
Step 8

Secure the clamps to the support posts.

Model	Deck Shape	Number of Clamps
ZZCH0618	Half Hex Deck	5
ZZCH0619	Hex Deck	6

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine the location of your decks by referring to your master footing diagram.

Step 4: Connect the decks. **See Detail A.** If there is only one deck go to **Step 5.** Place both decks upside down on a flat surface. Match the long edges, align holes and attach as shown.

Step 5: Attach the clamps to the post. **See Detail B** and **Elevation View.** Position the deck clamps on the support posts so that the top of the clamp is 1-3/4 in. (43 mm) below the suggested deck height. Ensure deck mount portion of the clamp points inward from the post. Attach as shown.

Step 6: Attach the hex deck assembly or the half hex deck to the clamps. **See Detail C.** With adequate manpower, lift the deck onto the clamps, align the holes in the deck with those in the clamps and attach as shown.

Note: For the hex deck assembly each deck must be attached to (3) three clamps.

Final Details.

Step 7: Square and level the support posts and deck assembly. Check to ensure deck assembly is at the specified height above the surfacing material level. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 8: Install drive rivets. **See Detail D.** After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH0618 - HALF HEX COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	5
BAE0020	RIVET - 1/4" x 11/16" DRIVE	5
BAE0600	WASHER - 1" O.D. FLAT	10
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	5
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	5
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	5
BPM0290	PLATFORM - CH HALF HEX PERF	1

CH0619 - HEX COATED PERFORATED DECK

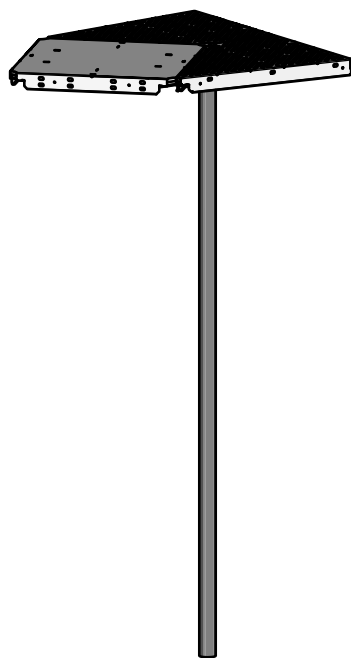
PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	6
BAE0020	RIVET - 1/4" x 11/16" DRIVE	6
BAE0600	WASHER - 1" O.D. FLAT	28
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	14
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	6
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	8
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	6
BPM0291	PLATFORM - CH HEX PERF	2



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Assembly View

Installation Instructions

Challengers® Model CH0891








Filler Post - Mighty Descent Slide

96 in. Deck (CH)

Installation Preparation

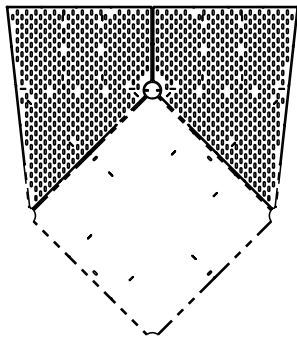
Recommended Crew: One (1) adult
 Installation Time: 0.75 man-hours
 Concrete Required: 0.13 cubic yard (0,10 cubic meters)

ICON KEY

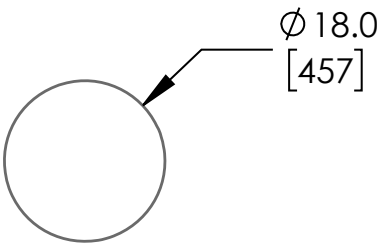
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

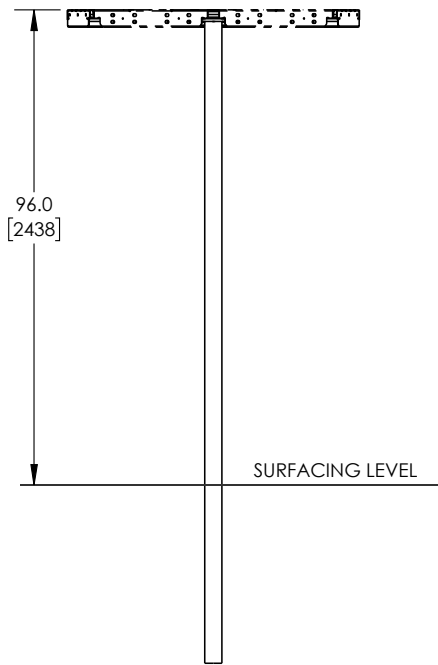
Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

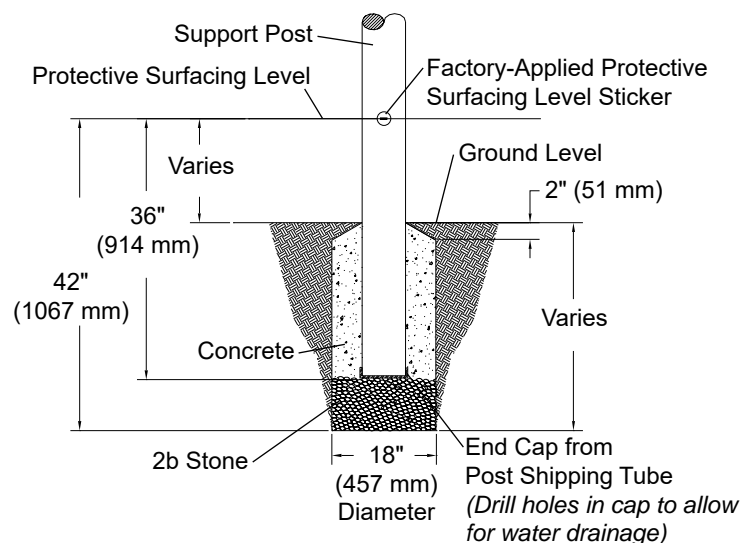


Footing Diagram



Elevation Views

Installation Instructions



Support Post Footing Detail (ASTM/CSA)

FOOTING NOTES

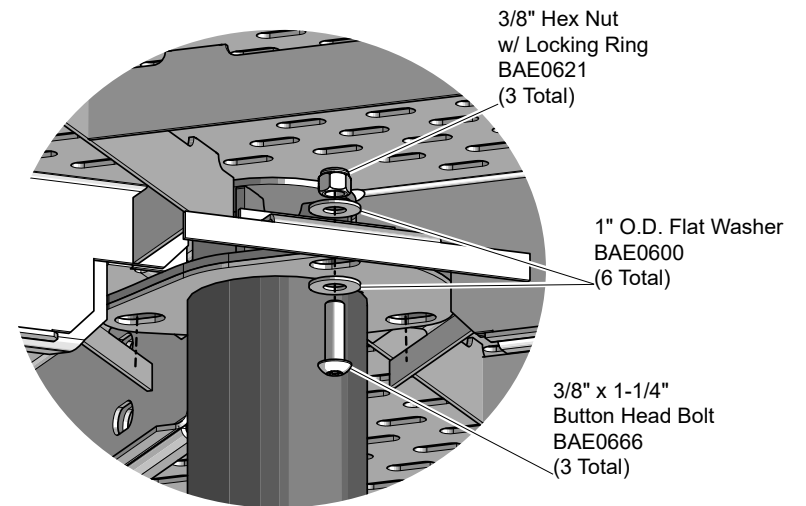
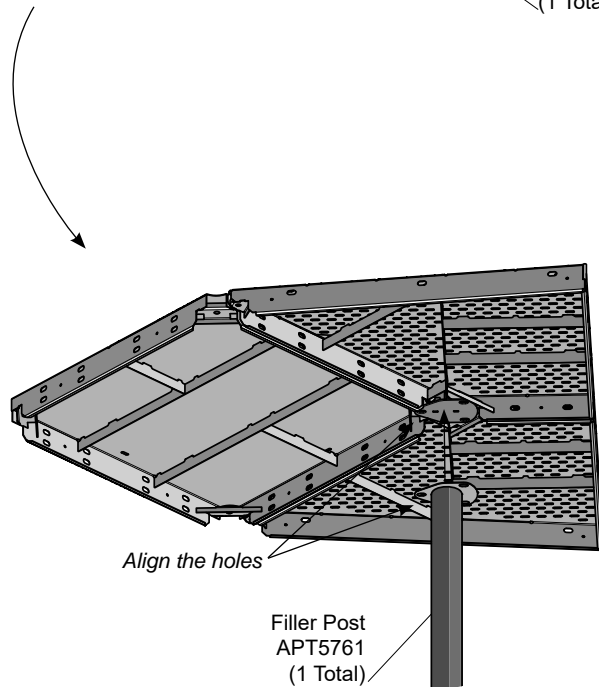
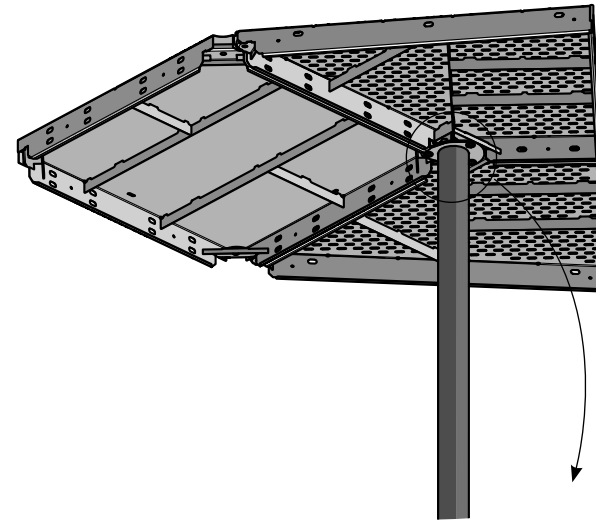
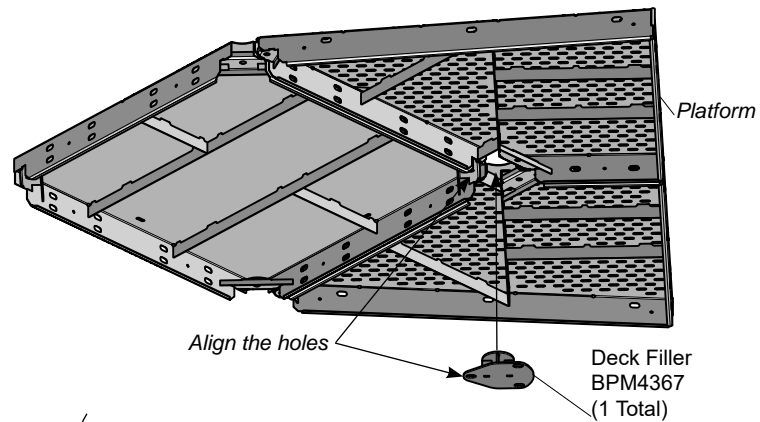
- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A Step 4

Attach the deck filler and filler
post to one of the decks.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Support Post Footing Details** on page 3 of this installation document.

Step 4: Attach the deck filler and filler post to one of the decks. See **Detail A**. Insert the deck filler up between the corners of the decks and align the holes. Position the filler post against the bottom of the deck filler, align the holes, and attach as shown.

Final Details.

Step 5: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

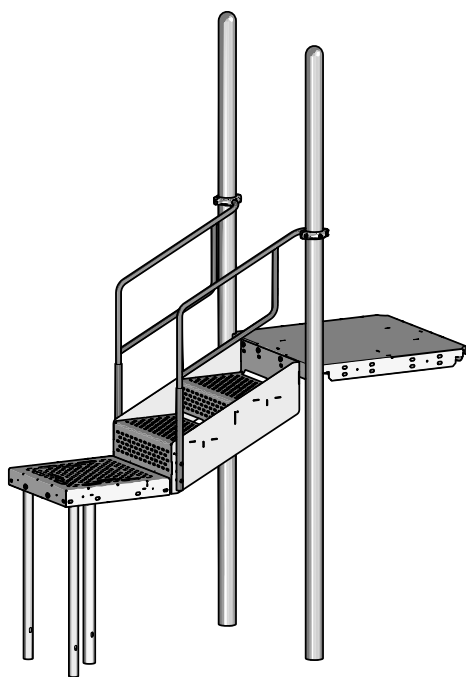
Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground Mount: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

CH0891 - FILLER POST - MIGHTY DESCENT SLIDE 96 in. DECK (CH)

PART NO.	DESCRIPTION	QTY.
APT5761	POST - MIGHTY DESCENT SLIDE FOR FILLER (CH)	1
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	6
BAE0621	NUT - 3/8"-16 ZINC HEX w/LOCKING RING	3
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	3
BPM4367	DECK FILLER - MIGHTY DESCENT SLIDE (CH)	1





Assembly View (representative model)

Note new footing diagram dimensions








Installation Instructions

Challengers® Models CH2006 and CH2007
36 in. (914 mm) Transfer Station and
36 in. (914 mm) Transfer Station w/Tall Guardrails

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time (In-Ground): 3 man-hours
Concrete Required: 0.09 cubic yard (0.07 cubic meters)
Use Zone: Refer to Master Layout Drawing
User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

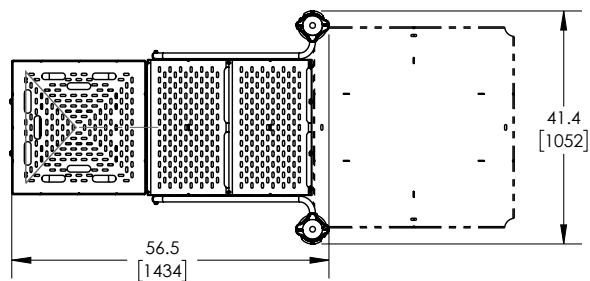
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

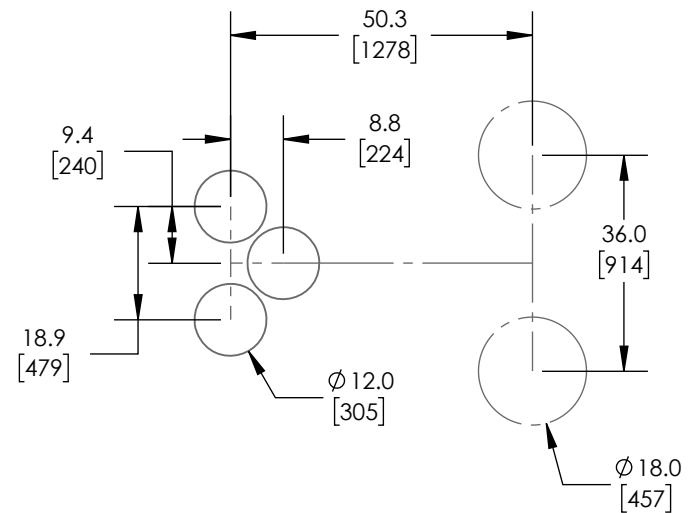
KEY

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Top #	Inches
Bottom #	[Millimeters]

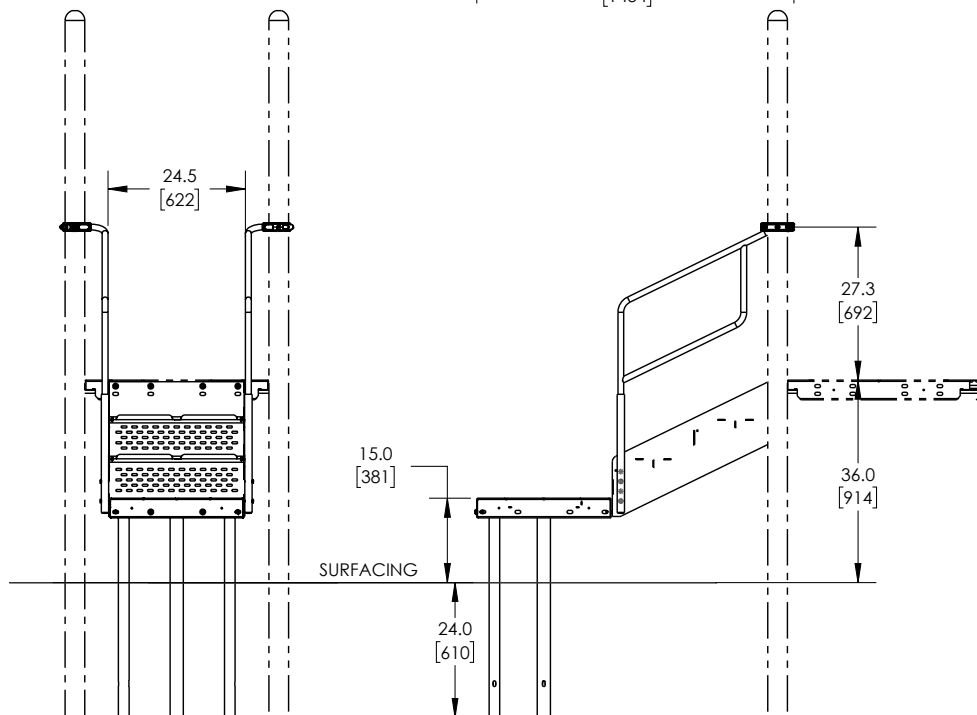
Top View



Note new footing diagram dimensions



Footing Diagram



Elevation Views
CH2006

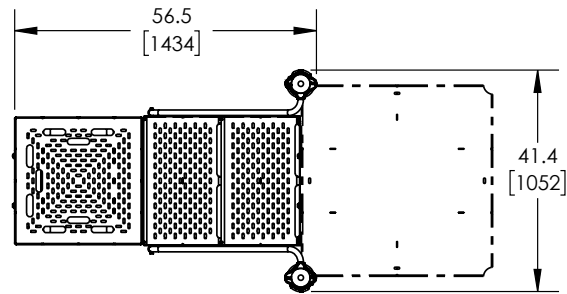


Installation Instructions

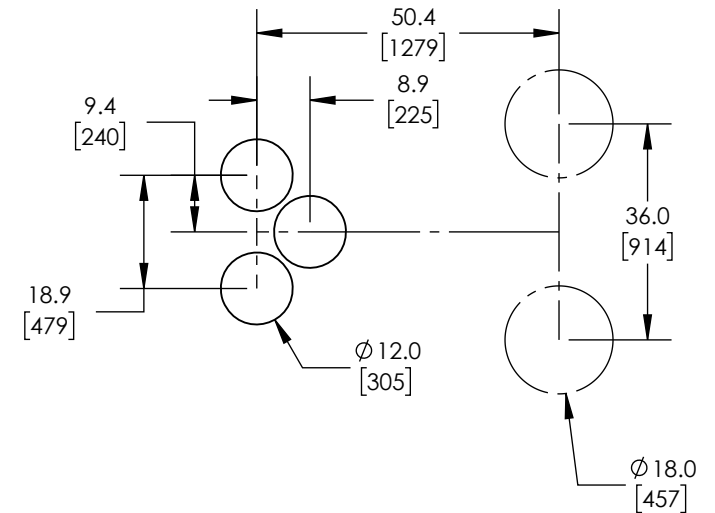
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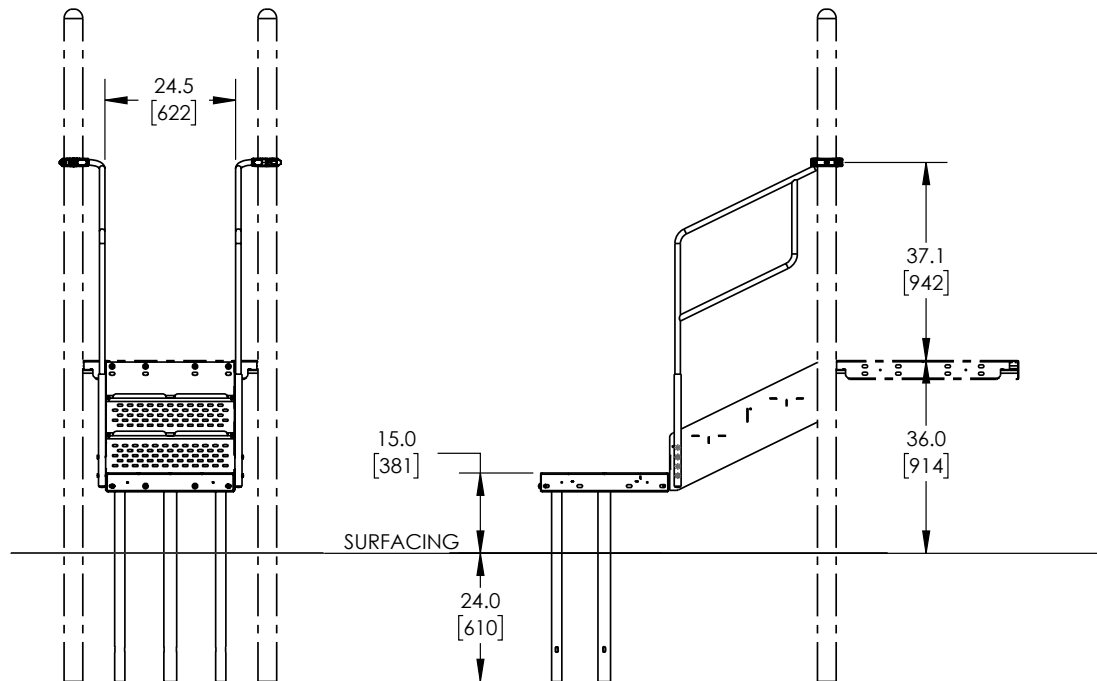
Top View



Note new footing diagram dimensions



Footing Diagram

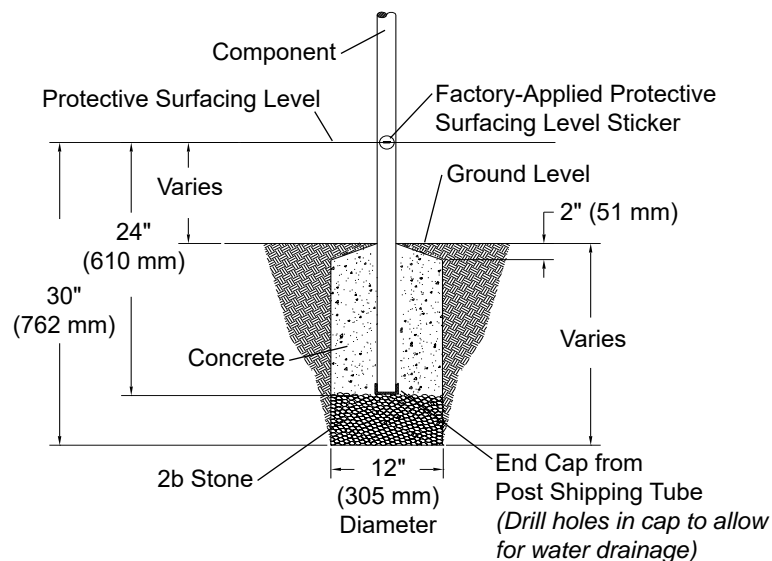


Elevation Views
CH2007



27" (685 mm)

Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

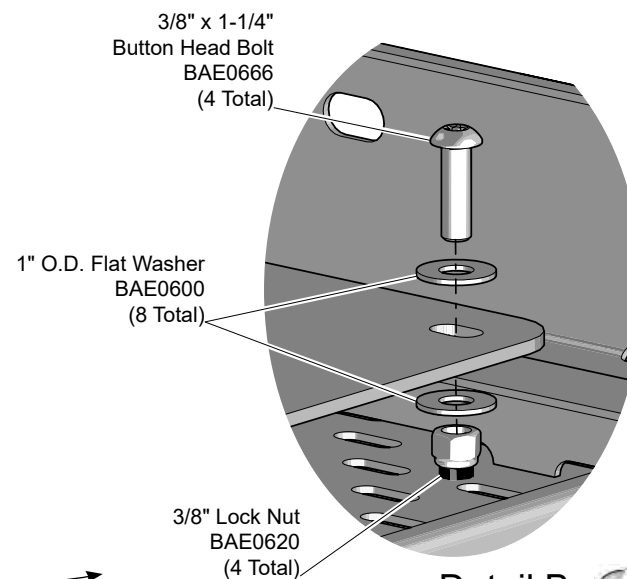
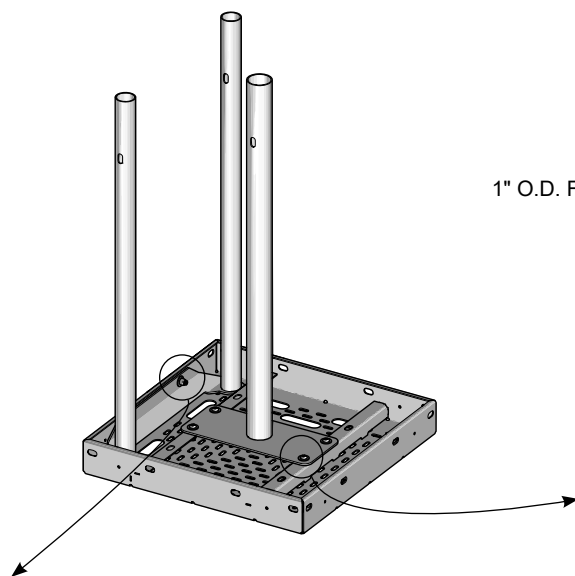
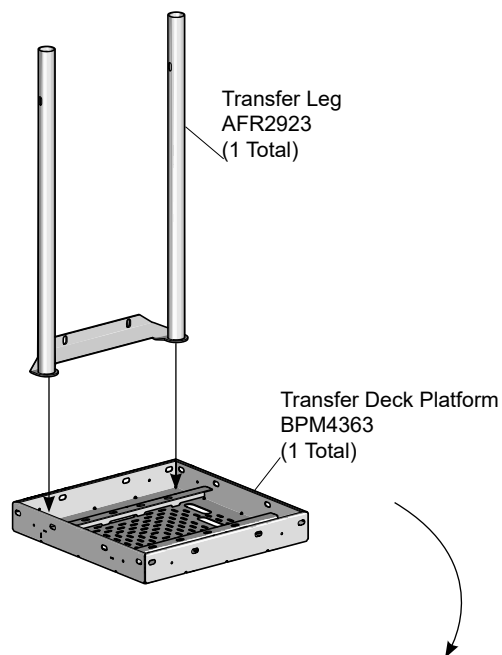
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

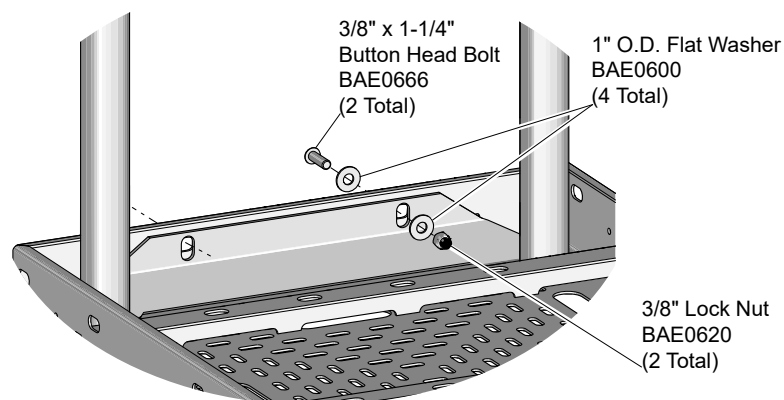
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 10.



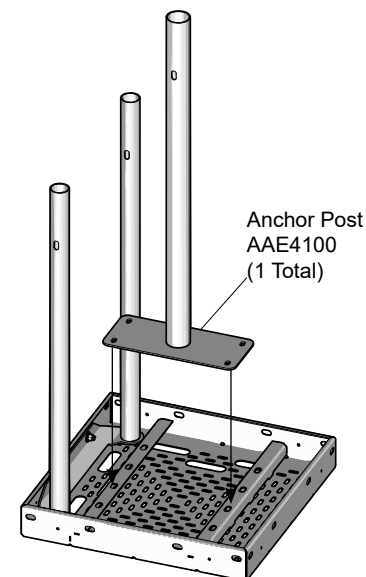
Detail B Step 5

Attach the anchor post to the transfer deck platform.

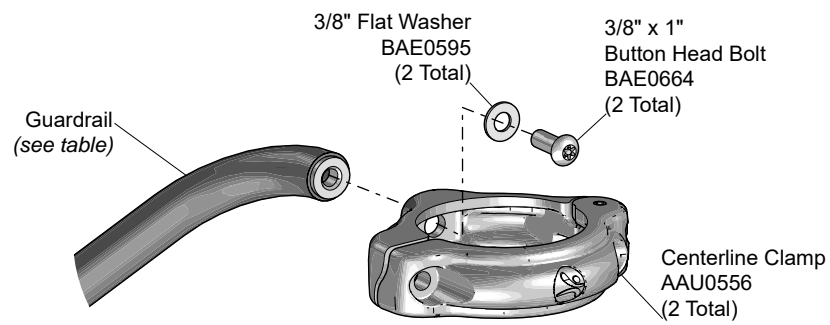


Detail A Step 4

Attach the transfer leg to the transfer deck platform.

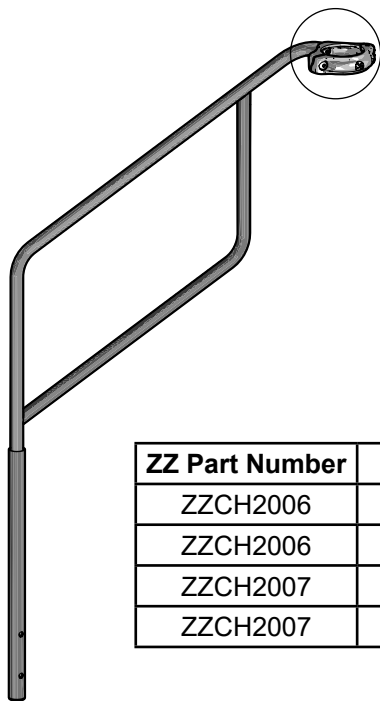


Installation Instructions

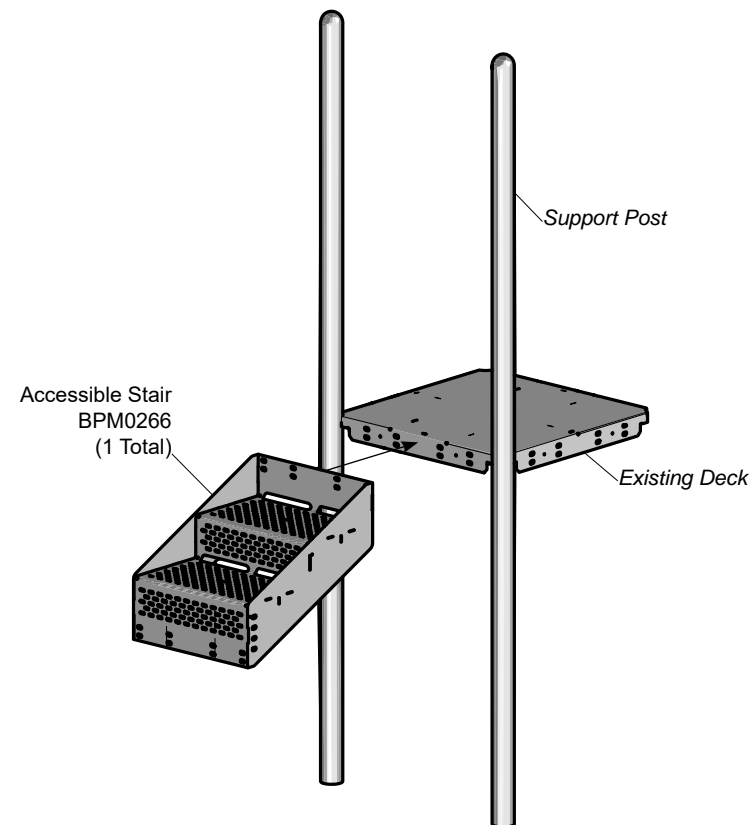


Detail C Step 6

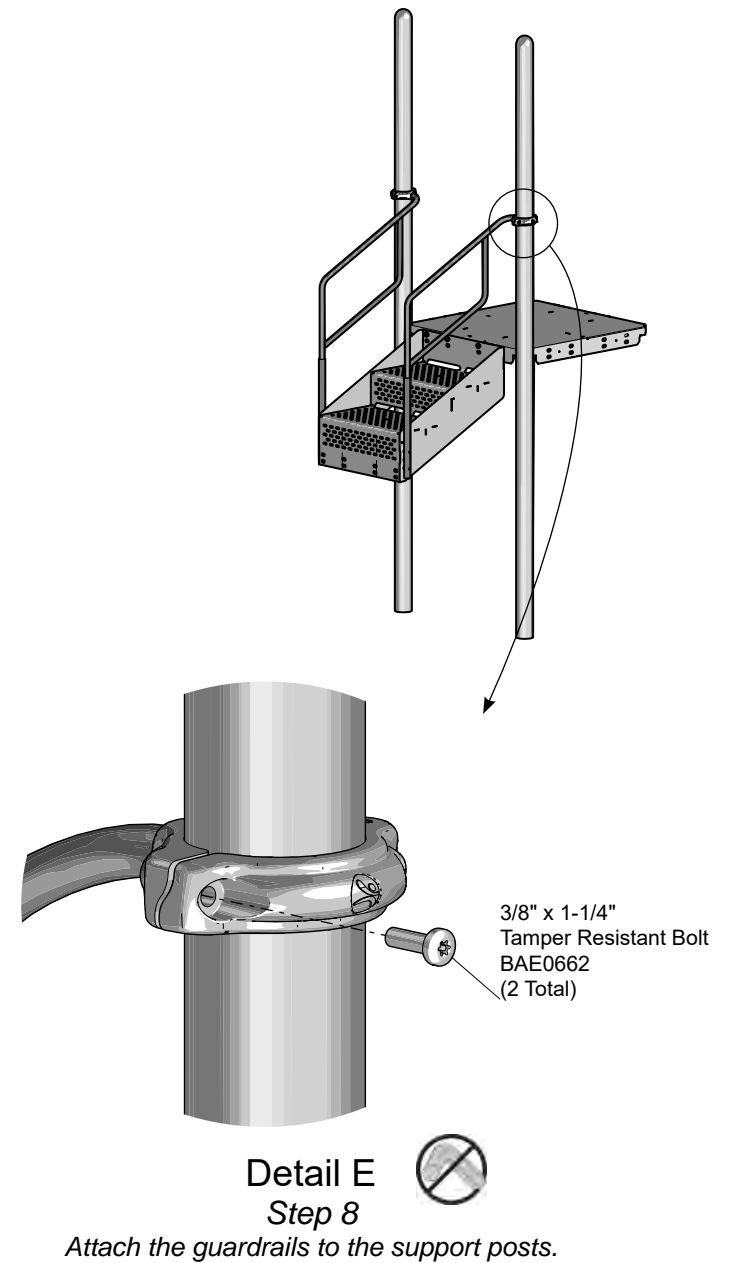
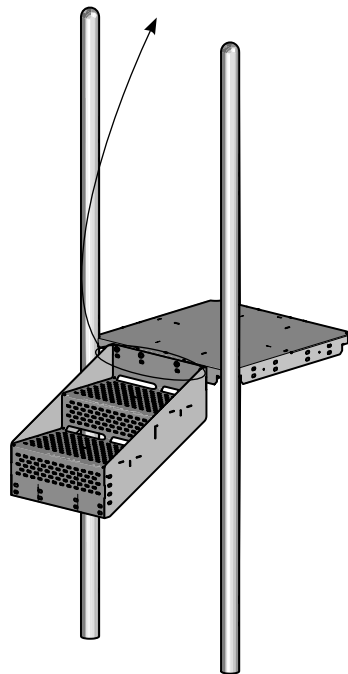
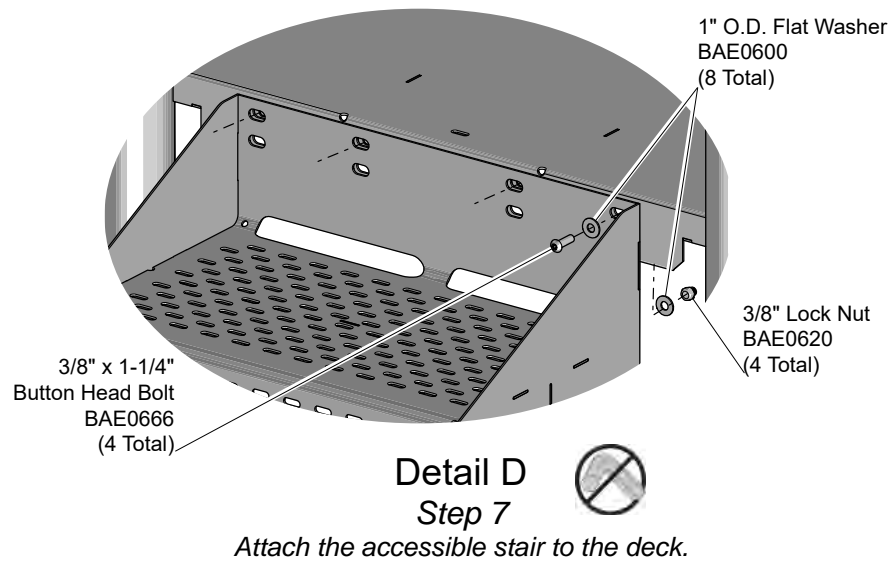
Attach the clamps to the left and right guardrails.



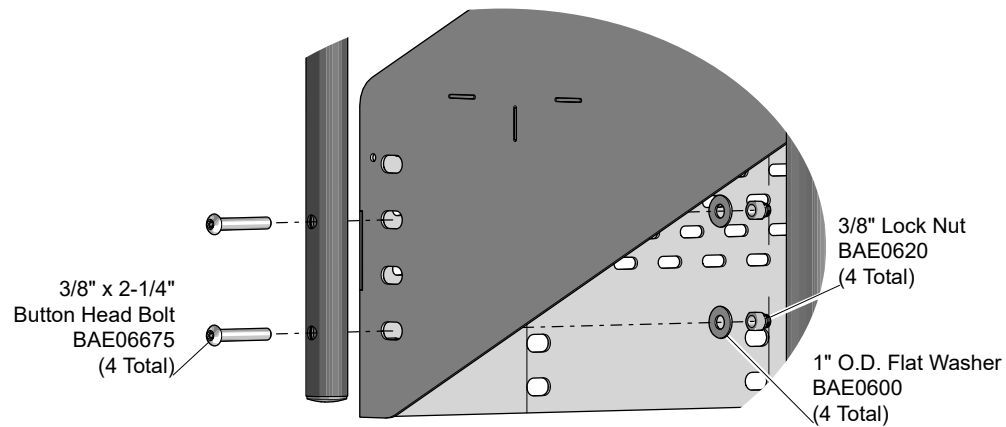
ZZ Part Number	Side	Guardrail Part Number
ZZCH2006	Left	AHR0051
ZZCH2006	Right	AHR0050
ZZCH2007	Left	AHR0053
ZZCH2007	Right	AHR0052



Installation Instructions

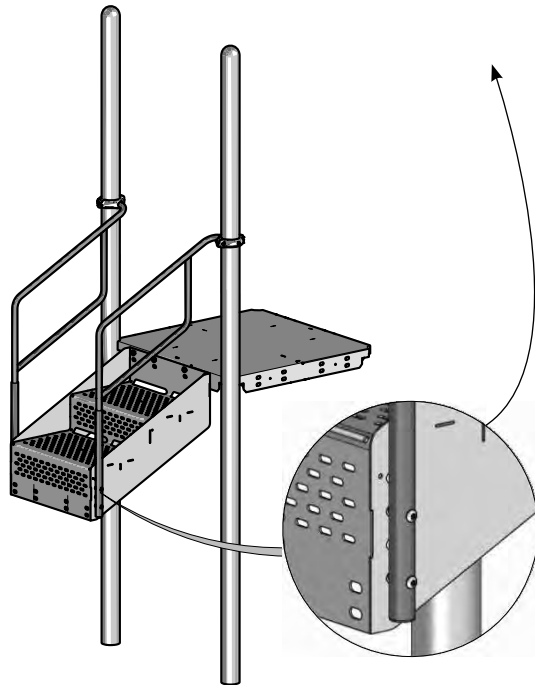


Installation Instructions

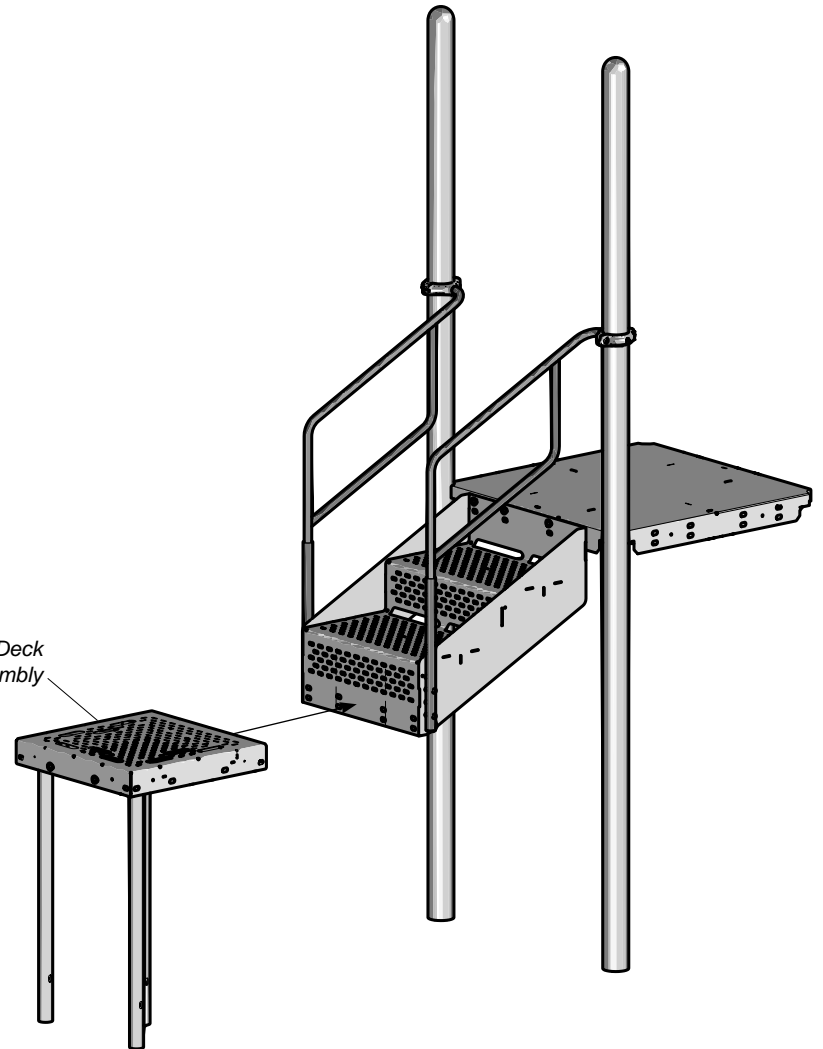


Detail F Step 9

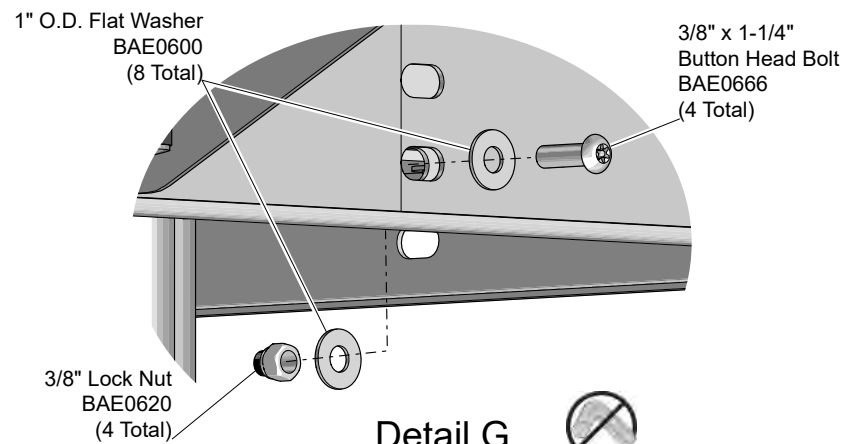
*Attach the guardrails to the
accessible stair.*



*Transfer Deck
Platform Assembly*

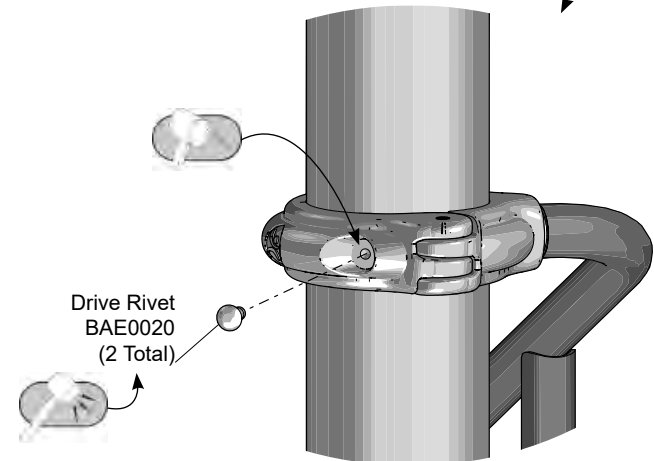
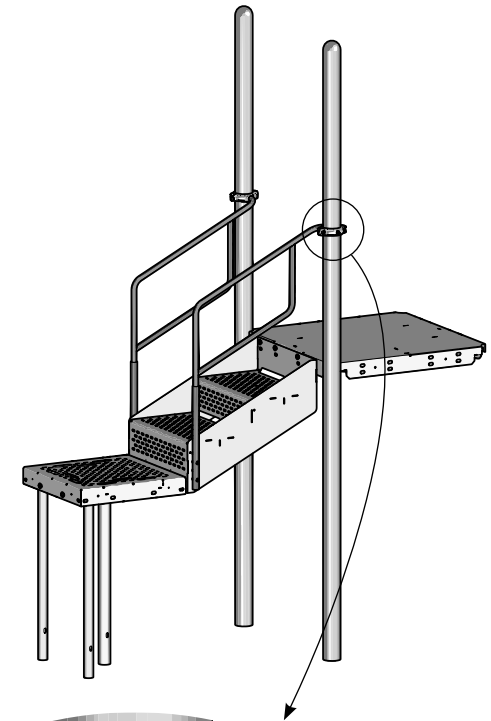
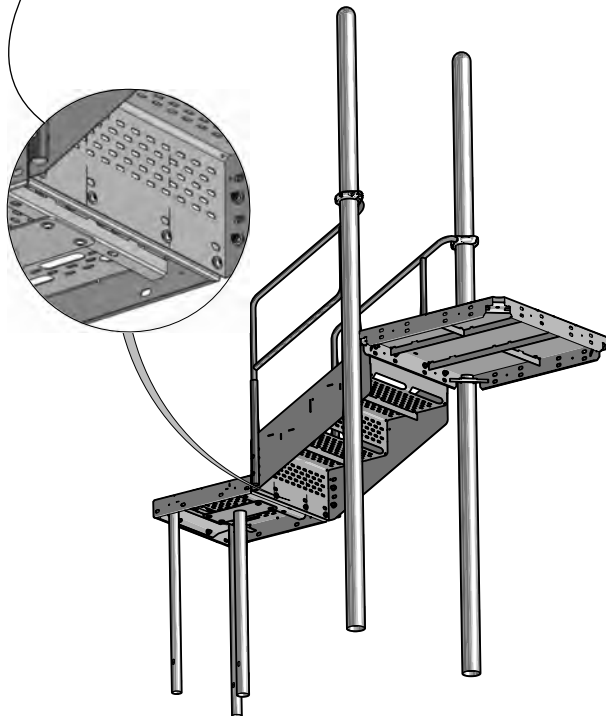


Installation Instructions



Detail G Step 10

Attach the transfer deck platform assembly to the accessible stair.



Detail H Step 12

Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Component Footing Details** on page 4 of this installation document.

Step 4: Attach the transfer leg to the transfer deck platform. See **Detail A**. Flip the transfer deck over and align the holes in the transfer leg with the side of the transfer deck. Attach as shown.

Step 5: Attach the anchor post to the underside of transfer deck. See **Detail B**. Align the holes in the anchor post mounting plate with the underside of the deck. Attach as shown. Center the leg on the deck and fully tighten connections.

Step 6: Attach the clamps to guardrails. See **Detail C**. Position the end of each guardrail top rail against the neck of each clamp and attach as shown.

Two (2) adults and a brace for the stair section are recommended to complete Steps 7-10.

Step 7: Attach the accessible stairs to existing support deck. See **Detail D**. Center stair on the side of the deck and align the upper holes. Attach as shown.

Note: The upper edge of the top stair riser should be flush with, and not protruding above the supporting deck surface.

Important note: The bottom of the stairs will need to be supported until the transfer deck is added.

Step 8: Attach guardrails to the support posts. See **Detail E** and **Elevation View**. Lift a guardrail into position between the post and the stairs. Close the clamps around the support post, and attach as shown.

Step 9: Attach the guardrails to the accessible stair. See **Detail F**. Align the guardrail holes with the holes in the bottom of the stair side rail. Attach as shown.

Note: The guardrails can be attached to the stair using either the first and third holes or the second and fourth holes in the stair side rails, depending on adjacent clamp positions. Both guardrails should be mounted at the same height.

Step 10: Attach transfer deck assembly to the stair. See **Detail G**. Place the transfer deck assembly into the prepared footings and align the bottom set of holes in the stair with those on the transfer deck. Attach as shown.

Final Details.

Step 11: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Step 12: Install drive rivets. See **Detail H**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH2006 - 36 in. (914 mm) TRANSFER STATION

PART NO.	DESCRIPTION	QTY.
AAE4100	POST - 14.00" x 37.19" w/PLATE	1
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AFR2923	TRANSFER LEG - 4.10" x 21.50" x 38.77"	1
AHR0050	GUARDRAIL- 3.28" x 29.06" x 51.41" (RIGHT)	1
AHR0051	GUARDRAIL - 3.28" x 29.06" x 51.41" (LEFT)	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	32
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	18
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	2
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	14
BAE06675	BOLT - 3/8"-16 x 2.25" BUTTON HEAD - SS	4
BPM0266	STAIR- 21" ACCESSIBLE TRANSFER	1
BPM4363	PLATFORM - 24.00" x 24.00" TRANSFER DECK	1

CH2007 - 36 in. (914 mm) TRANSFER STATION w/ TALL GUARDRAILS

PART NO.	DESCRIPTION	QTY.
AAE4100	POST - 14.00" x 37.19" w/PLATE	1
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AFR2923	TRANSFER LEG - 4.10" x 21.50" x 38.77"	1
AHR0052	GUARDRAIL - 3.37" x 29.06" x 61.25" (RIGHT)	1
AHR0053	GUARDRAIL - 3.28" x 29.06" x 61.25" (LEFT)	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	32
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	18
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	2
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	14
BAE06675	BOLT - 3/8"-16 x 2.25" BUTTON HEAD - SS	4
BPM0266	STAIR- 21" ACCESSIBLE TRANSFER	1
BPM4363	PLATFORM - 24.00" x 24.00" TRANSFER DECK	1





Assembly View

Installation Instructions








Challengers® Model CH2805

Entry Support Bracket

Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

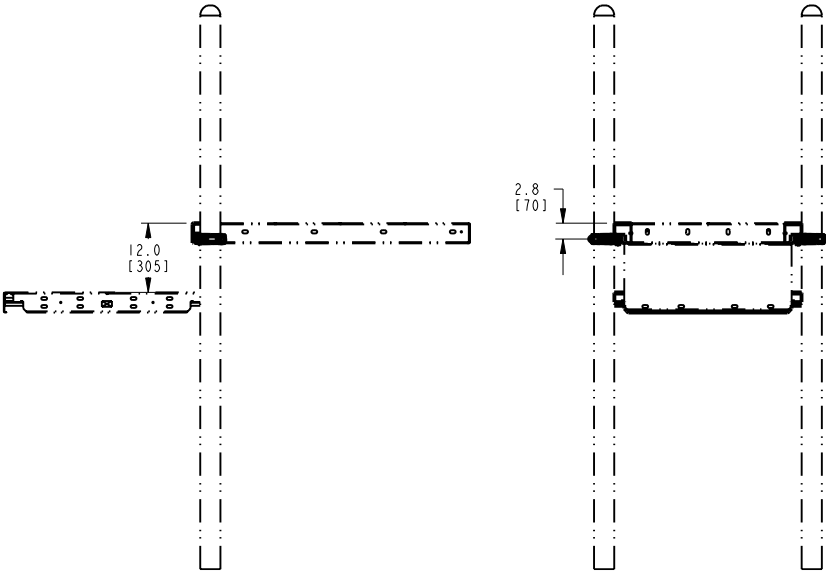
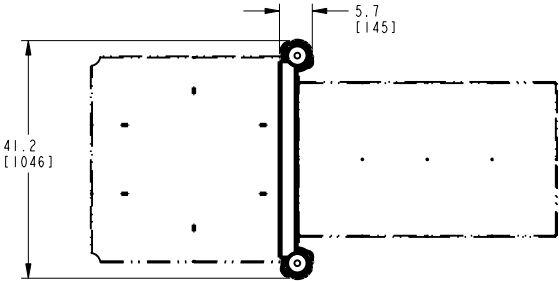
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View

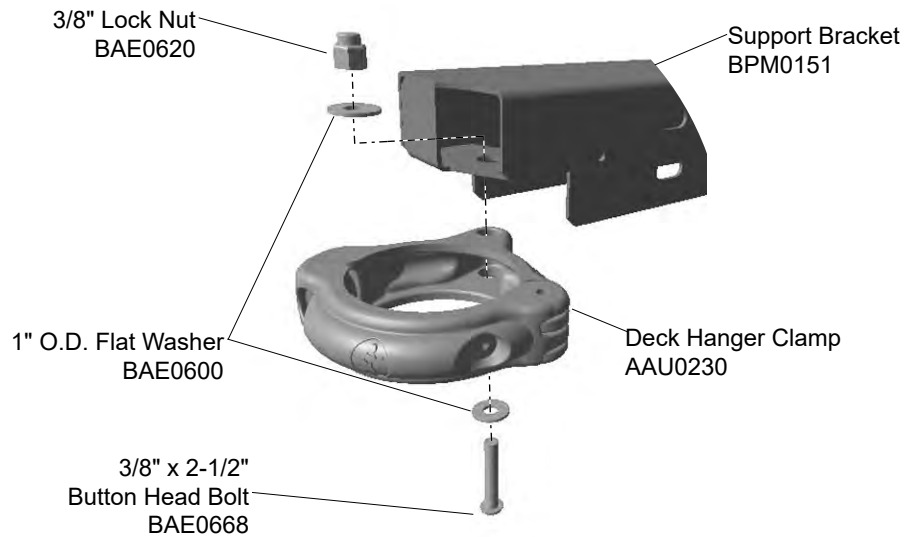


Elevation Views

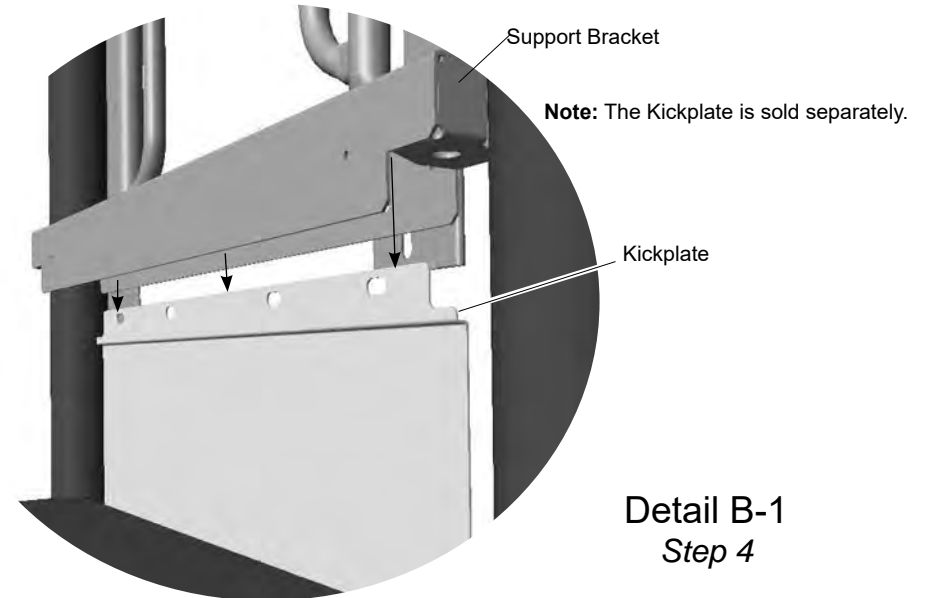
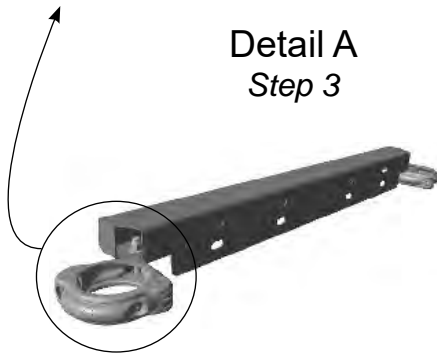


Installation Instructions

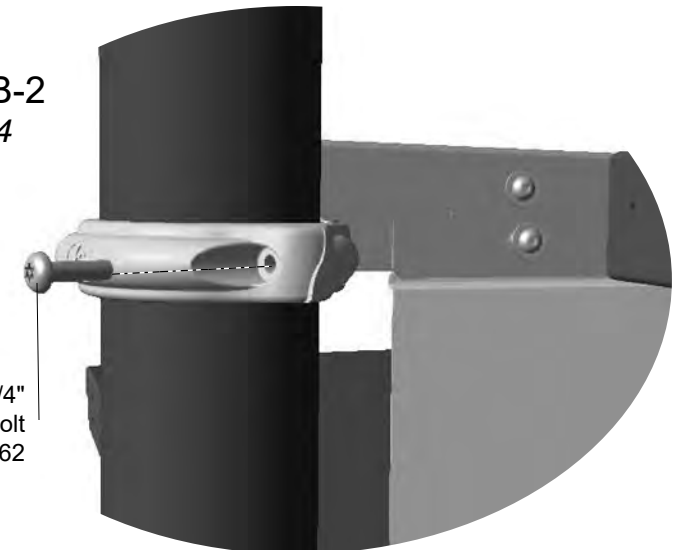
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



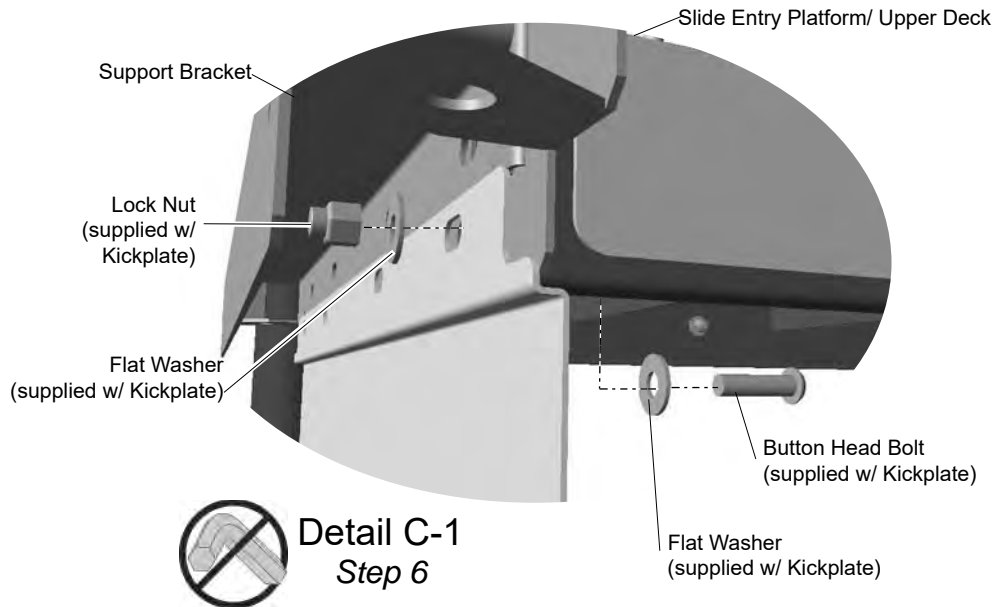
Detail A
Step 3



Important Note: The Kickplate fits inside of the support bracket with the bracket resting on the lip of the kickplate.

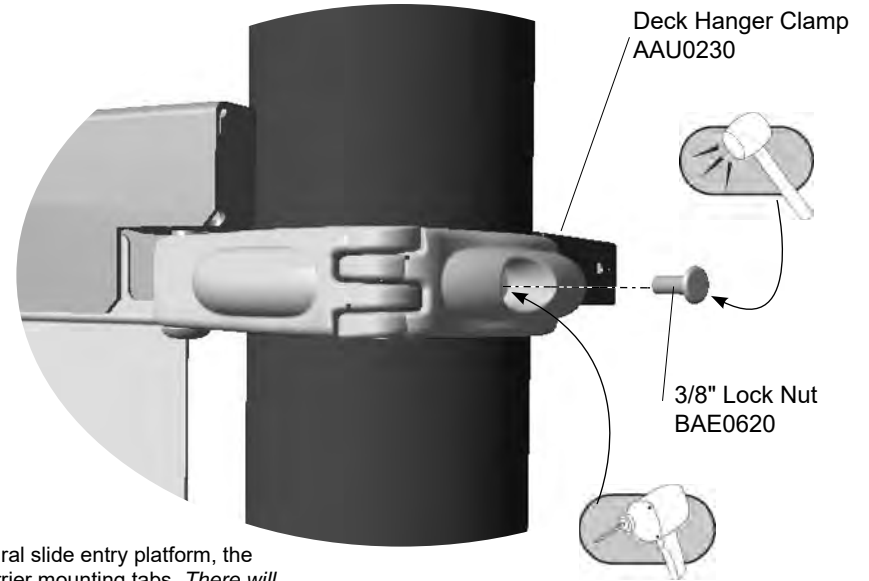
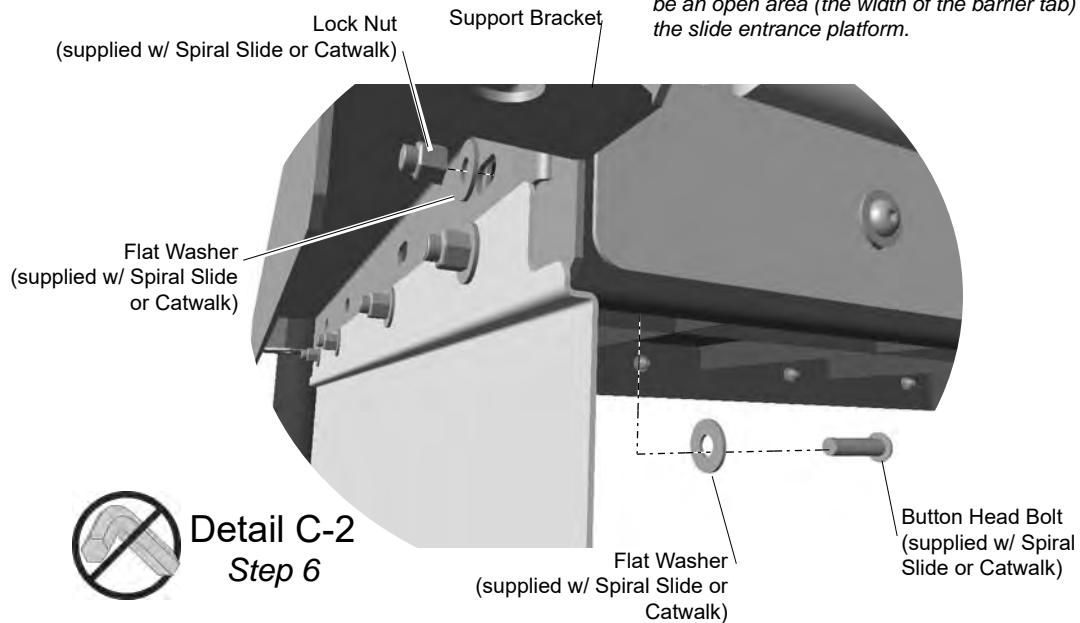


Installation Instructions



Note: The Kickplate is sold separately.

Important Note: If attaching the kickplate to a spiral slide entry platform, the support bracket will rest against the slide entry barrier mounting tabs. *There will be an open area (the width of the barrier tab) between the support bracket and the slide entrance platform.*



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Attach the deck clamps to the Entry Support Bracket.

Step 3: Attach the deck clamps to the entry support bracket. See **Detail A**. Select the entry support bracket, the deck clamps, and the appropriate hardware. There is (1) one connection per clamp, (2) two total connections. Orient the bracket as shown in **Detail A**. Attach the deck clamps as shown.

Attach the bracket assembly to the posts.

Step 4: Attach the bracket to the posts. See **Detail B-2** and **Side View**. Select the appropriate hardware. There is (1) one connection per clamp, (2) two total connections. Position the bracket between the support posts. Close the clamps around the posts, and attach as shown. Adjust the bracket so the surface is level. If applicable, the bracket should be aligned with the adjoining kickplate and/or the spiral slide/catwalk platform (refer to **Detail B-1**).

Note: The Kickplate is sold separately.

Spiral Slide/Catwalk Attachment:

Step 5: Assemble the spiral slide or catwalk selected for attachment to the entry support bracket in accordance with the specific installation instructions.

Step 6: Connect the spiral slide platform or catwalk to the entry support bracket, using the appropriate hardware and instructions. See **Details C-1 and C-2** and **Side Views**. The upper edge of the kickplate will fit inside, and against, the narrower side of the support bracket (with the post cutouts).

Important Note: If attaching the kickplate to a spiral slide entry platform, the support bracket will rest against the slide entry barrier mounting tabs. *There will be an open area (the width of the barrier tab) between the support bracket and the slide entrance platform.*

Final Details.

Step 7: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 8: Install drive rivets. See **Detail D**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH2805 - ENTRY SUPPORT BRACKET

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	2
BPM0151	BRACKET - 34.00" x 3.00" x 3.44" STEP UP	1



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Assembly View (representative model)

Job Description	Installation Time
Slide Entrance & Canopy assembly	1 hour
Excavate footing holes (in-ground only)	0.5 hour per hole
Section to Section connection	0.25 hour
Slide / Exit Support Post attachment	0.25 hour per post

Installation Instructions

Challengers® Models CH3206 and CH3206S

Slither Slide No.2

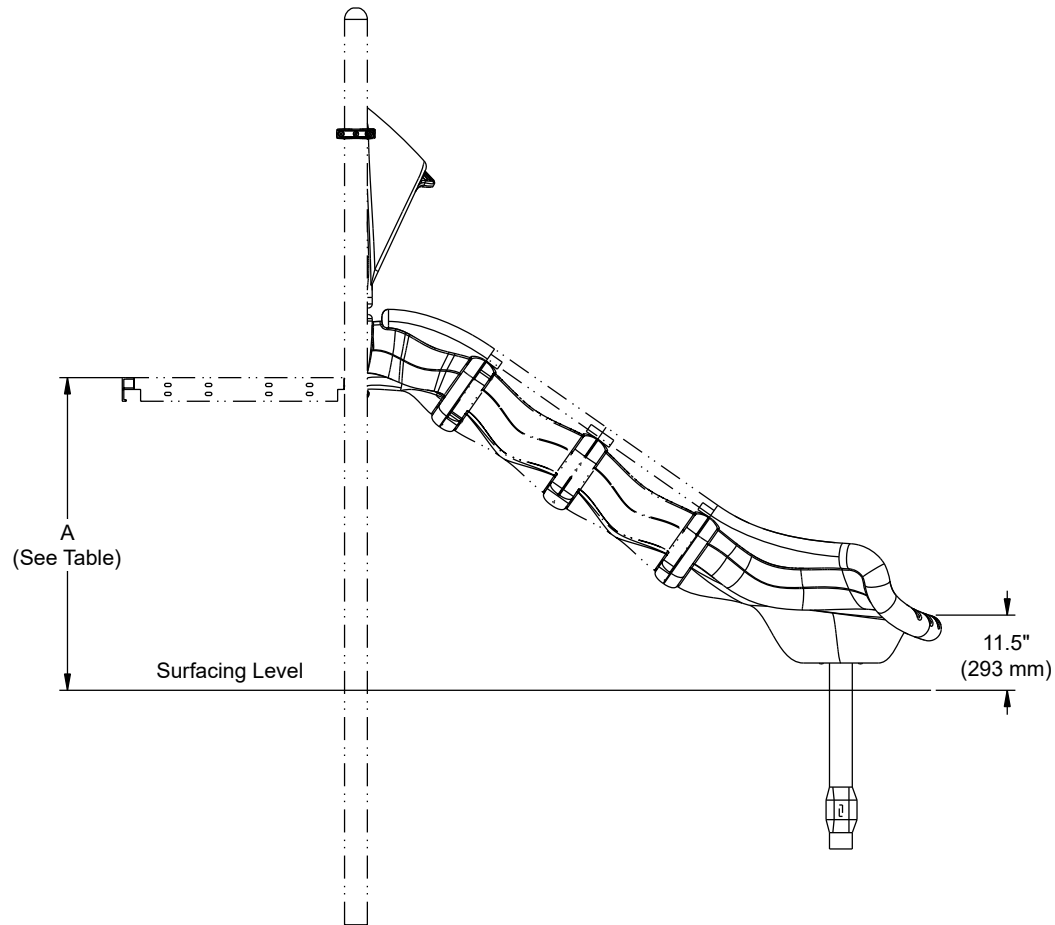
In-Ground and Surface Mount

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: refer to the table at left
 Concrete Required (per in-ground support only):
 0.03 cubic yard (0,02 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): 48": ASTM: 2-12, CSA: 1.5-12, EN: 2-14
 60"-108": ASTM/CSA: 5-12, EN: 6-14

ICON KEY			
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions



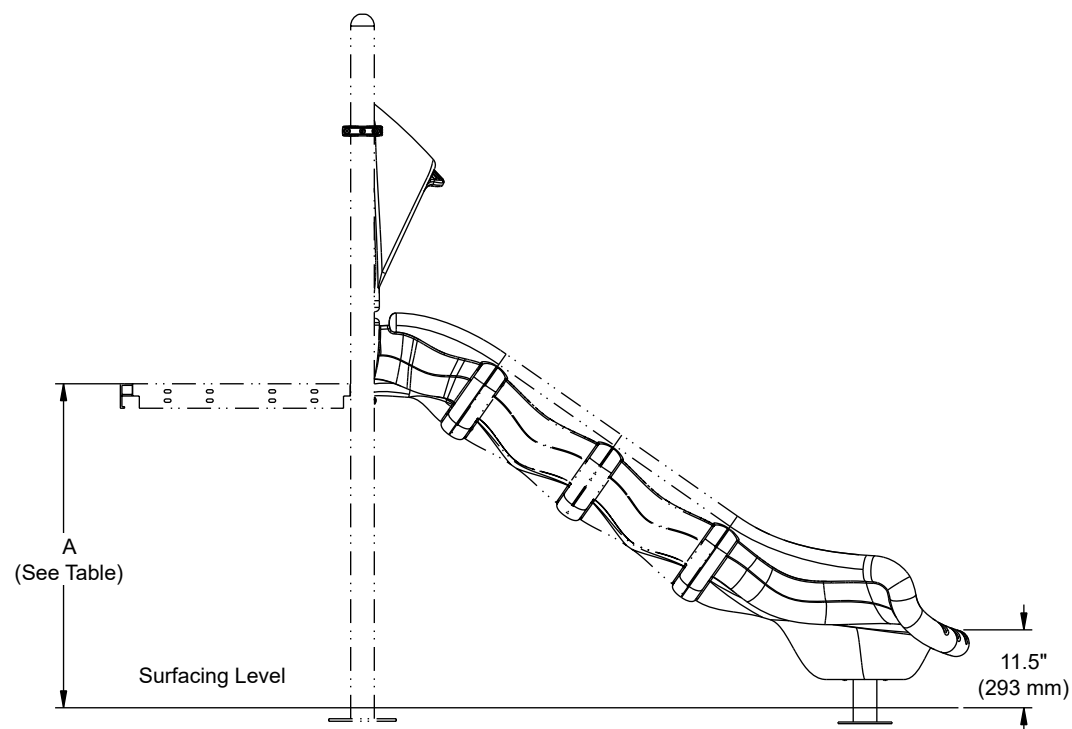
Elevation View
CH3206

Note: The slide shown is a representation only and may not be your slide configuration. Refer to the slide detail drawing accompanying the master composite drawing for configuration and specific numbers of slide sections and support posts.



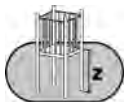
(A) Deck Height	Critical Fall Height (EN)
48" (1219 mm)	1220 mm
60" (1524 mm)	1525 mm
72" (1829 mm)	1830 mm
84" (2134 mm)	2135 mm
96" (2438 mm)	2440 mm
108" (2743 mm)	2745 mm

Installation Instructions



Elevation View
CH3206S

Note: The slide shown is a representation only and may not be your slide configuration. Refer to the slide detail drawing accompanying the master composite drawing for configuration and specific numbers of slide sections and support posts.

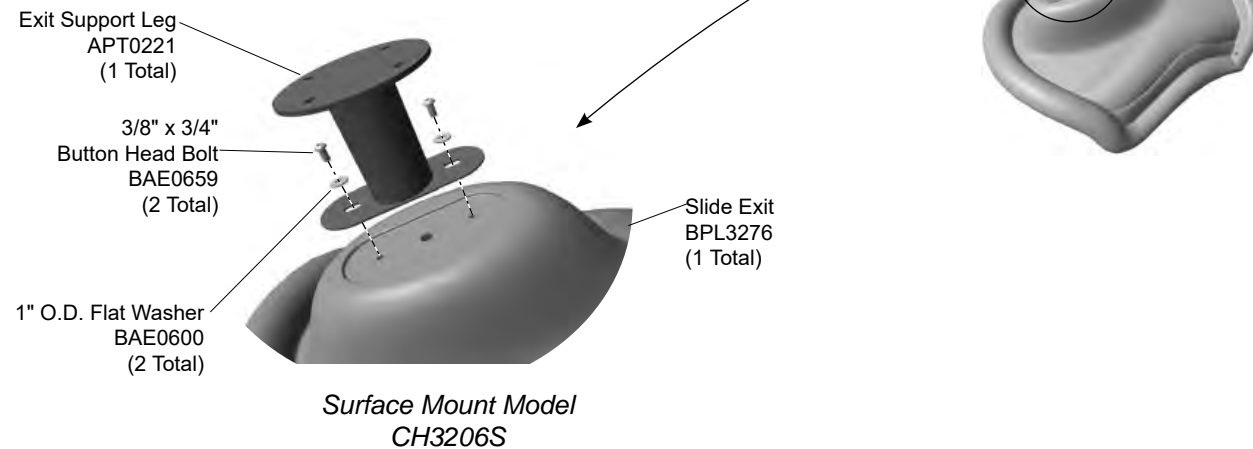
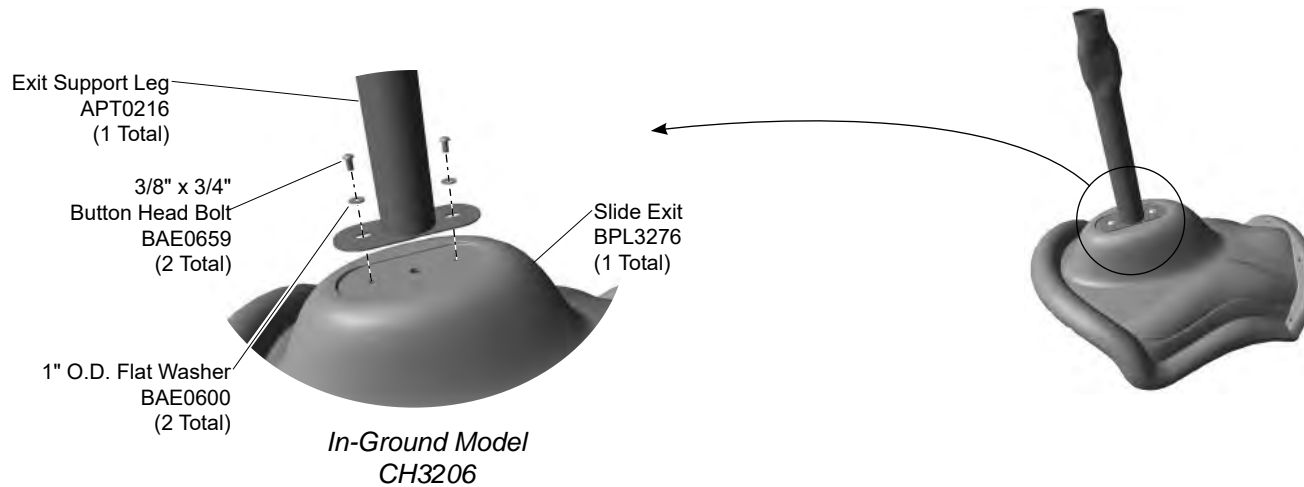


(A) Deck Height	Critical Fall Height (EN)
48" (1219 mm)	1220 mm
60" (1524 mm)	1525 mm
72" (1829 mm)	1830 mm
84" (2134 mm)	2135 mm
96" (2438 mm)	2440 mm
108" (2743 mm)	2745 mm



Installation Instructions

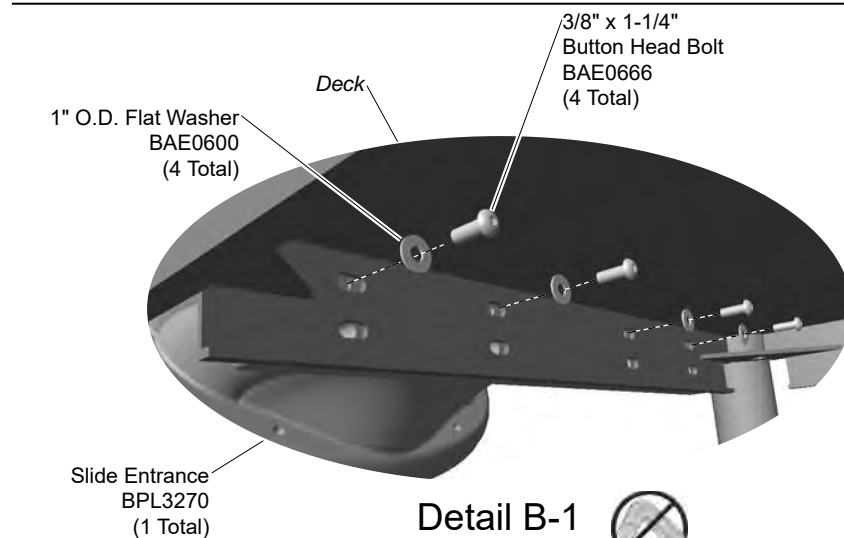
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 9.



Detail A Step 5

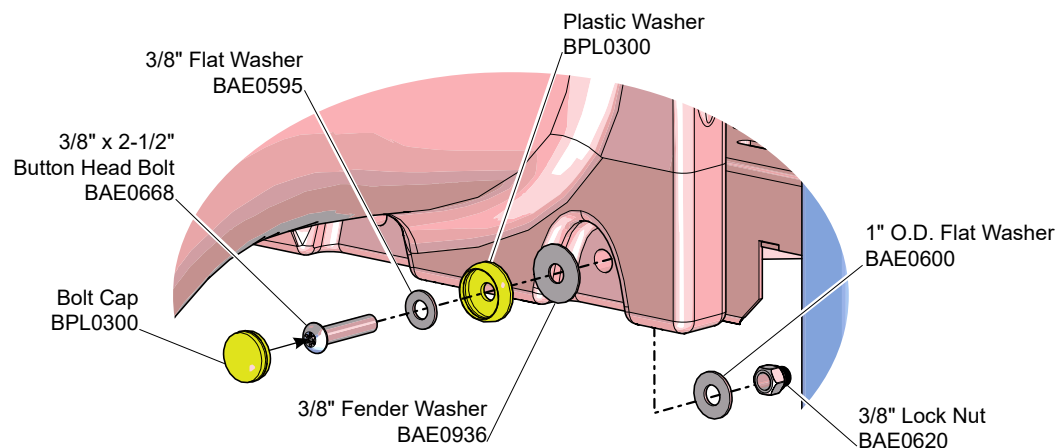
Attach the exit support leg to the slide exit.

Installation Instructions



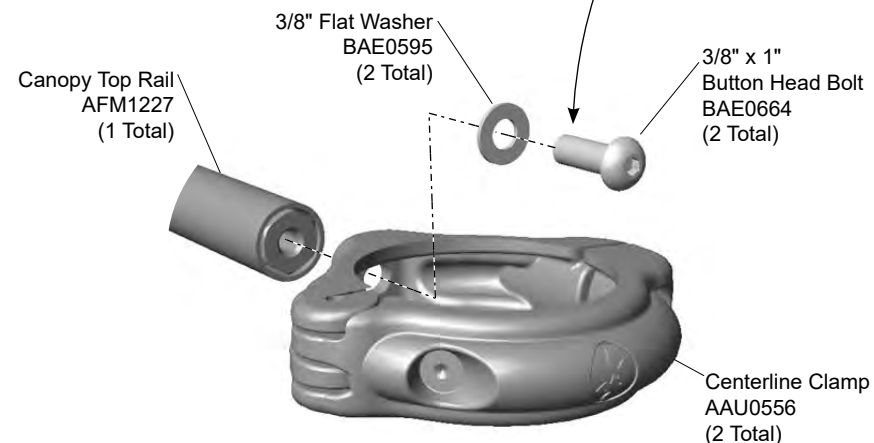
Detail B-1
Step 6

*Attach the slide entrance to the deck
(upper connections)*



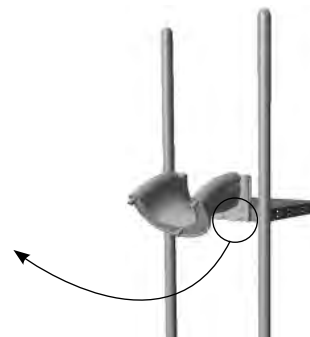
Detail B-2
Step 7

*Attach the slide entrance to the deck
(lower connections)*

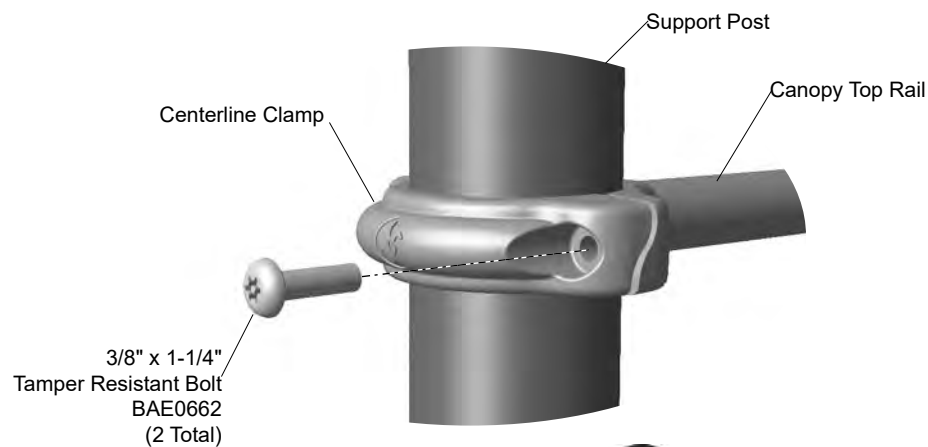


Detail C
Step 8

*Attach the clamps to the canopy
top rail.*

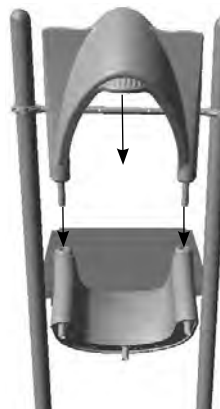


Installation Instructions

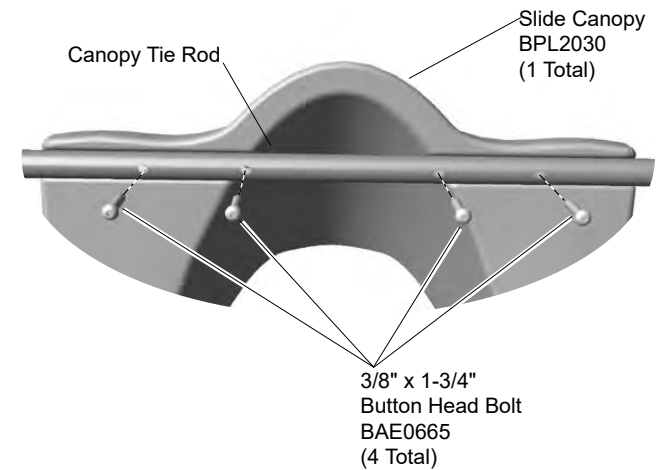


Detail D
Step 9

Attach the canopy top rail to the support posts.

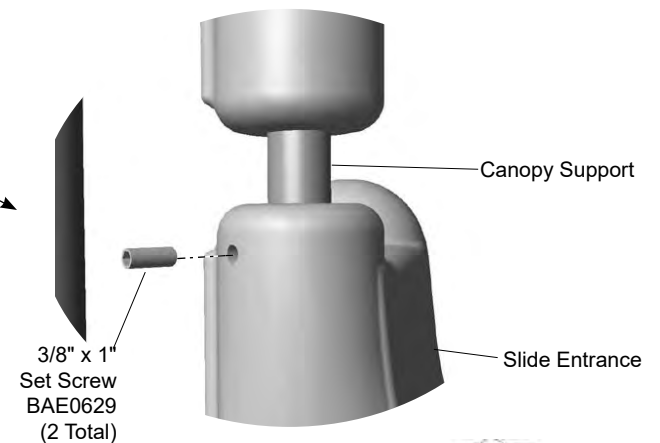
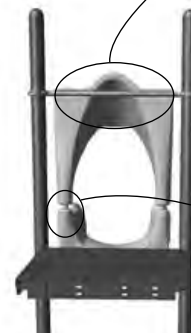


Detail E-1
Step 10



Detail E-2
Step 10

Attach the slide canopy to the canopy top rail.



Detail F
Step 11

Secure the slide canopy to the slide entrance.



Installation Instructions

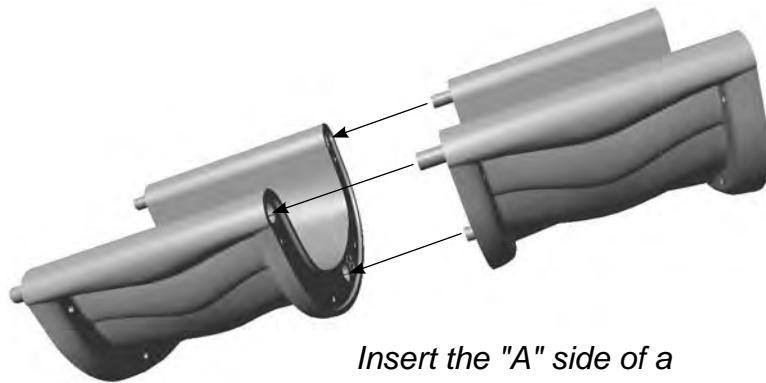


"B" Side

"A" Side

Lay the slide out on the ground in the correct configuration prior to connecting the sections. Start at the top of the slide and work down.

Note: Leave both bottom holes open at the appropriate location for support post placement. Refer to the drawings showing the slide configuration.



Insert the "A" side of a section into the "B" side of the next section.

Slide Section Orientation

Slide Section	Part Number	ZZ Number
Entry	BPL3270	CH3206(S)
Straight	BPL3271	UN3207
Right turn	BPL3272	UN3208
Left turn	BPL3273	UN3209
Right 120°	BPL3274	UN3217
Left 120°	BPL3275	UN3275
Exit	BPL3276	CH3206(S)
Roller	ASY0254	UN3219



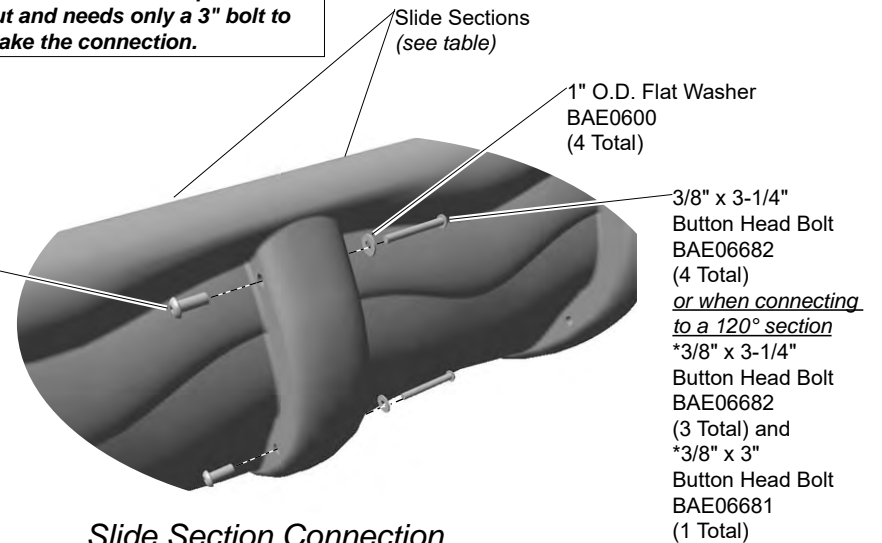
The upper inside hole on the 120° section contains a threaded insert that doesn't require a barrel nut and needs only a 3" bolt to make the connection.

3/8" Barrel Nut
BAE0632
(4 Total)

*(3 Total when attaching to a 120° section)

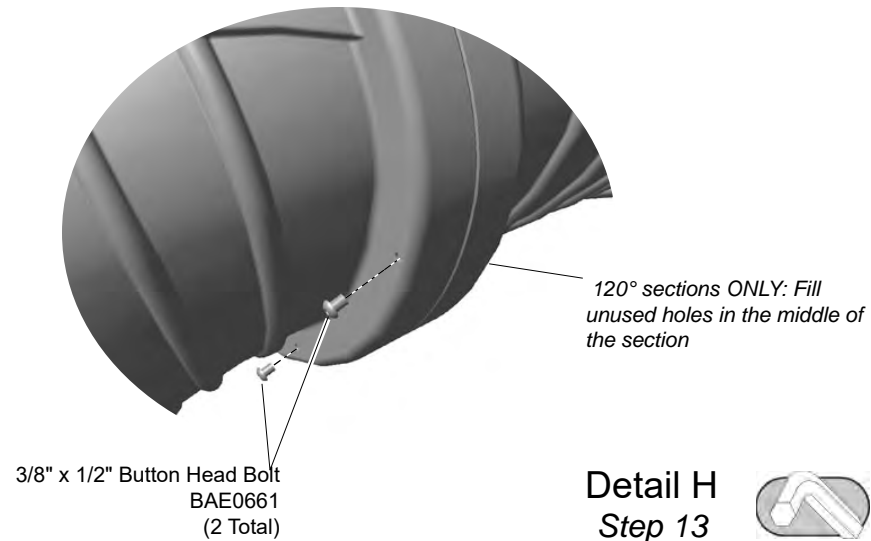
Detail G Step 12

Attach the slide sections together.

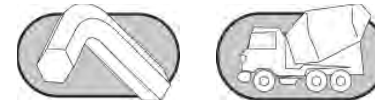


Slide Section Connection Reference

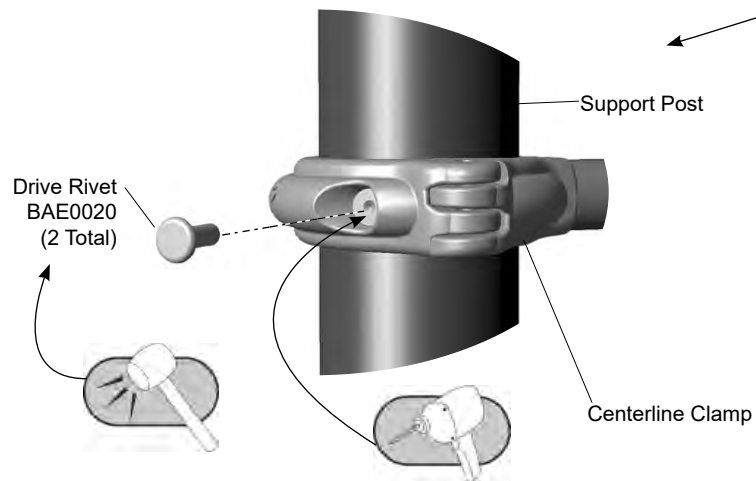
Installation Instructions



Detail H
Step 13
(if applicable)

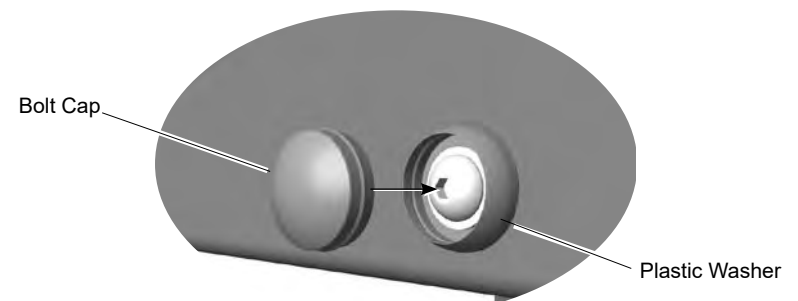


Step 14



Detail I
Step 15

Secure the clamps to the support posts.



Detail J
Step 16
(refer to Detail B-2 also)

Installation Instructions

This is a composite installation instruction for both an in-ground and surface mount slither slide that is attached to a deck.

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete. Do not install bolt caps until the structure is completely assembled and properly footed.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Lay out the footings as shown on the structure master footing diagram. Excavate the holes for the in-ground slide exit support leg as shown in the **Component Footing Details** in the *Guidelines* at the beginning of this booklet.

__Step 4: Lay the slide sections out on the ground in the order specified on the master layout diagram.

Important Notes:

- Each slide section has an 'A' and 'B' end. See **Slide Section Orientation**. The 'A' end contains the protruding tubes and should be positioned *facing* toward the slide exit.
- The frame of reference for the curved sections is looking *down* from the deck to the slide exit.
- Assemble the slide from the top down.

Attach the exit support leg to the slide exit.

__Step 5: Attach the exit support leg to slide exit. See **Detail A**. Place the exit support leg into the indentation under the slide exit. Fully tighten the connections.

Attach the slide entrance to the deck.

__Step 6: Attach the slide entrance to the deck. See **Detail B-1**. Select the slide entrance and the appropriate hardware. Position the slide entrance against the deck and align holes in the slide with those in the deck. Use an alignment tool through the lower outside holes to hold it in place. Make the *upper* attachments from underneath the deck and attach as shown. *The middle of the slide bedway should be flush to, and level with the deck.* Leave connections loose for alignment adjustments.

__Step 7: Make the *lower* attachments to the slide and deck. See **Detail B-2**. Select the appropriate hardware. Make the lower attachments as shown. Leave the connections loose. Do not attach bolt caps until the structure is completely assembled and properly footed.

__Step 8: Connect the clamps to the canopy top rail. See **Detail C**. Place a clamp against each end of the top rail and attach as shown. Turn the clamps so that the hinges are on the same side and fully tighten the connections.

__Step 9: Attach the top rail to the posts. See **Detail D**. Position the top rail between the posts and close the clamps around the posts. Thread a bolt into each clamp as shown. Move the top rail to approximately 38" (965 mm) above the deck and leave the connections loose.

Secure the canopy to the slide entrance.

__Step 10: Position and attach the canopy. See **Details E-1 and E-2**. Place the canopy above the slide entrance and slide the canopy supports into the sockets in the slide until fully seated. The top rail should fit into the indentation in the back of the canopy. Attach the top rail to the canopy as shown. If there is a clamp conflict the top rail can be moved up to 40" (1016 mm).

__Step 11: Secure the lower canopy supports to the slide. See **Detail F**. Select (2) two 3/8" x 1" set screws. Thread each screw into the slide until the screw is tight against the canopy supports.

Note: It may be necessary to use a 3/8" -16 tap to clean excess plastic to allow the screw to contact the canopy support.



Installation Instructions

Assemble the slide.

Lay the slide sections out on the ground in the correct configuration and orientation. Place the support posts beside the appropriate joint. Refer to the master drawing for the configuration and order of sections.

__Step 12: Attach the slide sections together. See **Detail G**. Starting at the slide entrance, select the first slide section and the appropriate hardware. Fit the first section into the entry section, and attach as shown. Reference the **Slide Section Connection Reference** for all section to section connections except when attaching a support post. If a support post will be attached to the joint, leave the bottom (2) two holes open. Block or brace the slide while assembling the remaining sections. Snug tighten the connections.

Important Note: Sections that attach to a 120° section will attach as shown in the **Slide Section Connection Reference** except that the **upper inside hole on the "B" side of the 120° section contains a threaded insert and will not require the barrel nut.**

Support Post Note: For slides attached to decks 60 in. or higher, support posts will be utilized to help support the slide. **Generally, a support post will be attached at the end of every three sections down the length of the slide starting with the slide entrance.** Because of different slide configurations, you must reference the master layout drawing for the location and number of support posts that accompany your slide. The 120° sections have a middle seam that can accept a support post in some configurations. (See the installation instructions for the support post)

__Step 13: (if applicable) Fill in any open lower holes under the middle of the 120° sections. See **Detail H**. Select 3/8" x 1/2" button head bolts. Thread each bolt into an open hole. Fully tighten the connections.

Final Details.

__Step 14: Plumb and level the entire slide. Tighten **all** fasteners keeping all the joints flush and even. There should not be any measurable gaps between sections. Fully tighten all fasteners according to tightening torque specifications. Adjust the exit height of the slide so it will not hold water. See **Elevation View**.

48" Slide: The slide exit height can be adjusted to avoid retaining water but can be no greater than 11 in. (279 mm) from the protective surfacing.

60" - 108" Slides: The slide exit height can be adjusted to avoid retaining water but can be no less than 7 in. (178 mm) and no greater than 15 in. (381 mm) from the protective surfacing.

Torque specifications :

Nuts and Bolts: Snug tighten and tighten an additional one-half turn.

Set Screws: Snug tighten and tighten an additional turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

__Step 15: Install drive rivets. See **Detail I**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, pound the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

__Step 16: Select the plastic bolt caps and press into the plastic washers. See **Details B-2 and J**. The bolt caps install more easily when they are warm.

__Step 17: Apply the hood string entanglement warning label to the equipment at eye level.

CH - SLITHER SLIDE NO. 2 ENTRY / EXIT - CH3206 (IN-GROUND)

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB METAL - 1.315" O.D. x 30.50"	1
APT0216	POST - 3-1/2" O.D. x 28-3/4" EXIT SUPPORT	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	14
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0632	NUT - 3/8"-16 x 1-1/4 BARREL w/PATCH	4
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRV	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4
BAE0936	WASHER - 3/8" I.D. x 1-1/4" O.D. FENDER	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL3270	SLIDE - SEGMENTED ENTRANCE	1
BPL3276	SLIDE - SEGMENTED EXIT	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1

CH - SLITHER SLIDE NO. 2 ENTRY / EXIT - CH3206S (SURFACE MOUNT)

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB METAL - 1.315" O.D. x 30.50"	1
APT0221	POST - 3-1/2" O.D. x 6-3/4" SM EXIT SUPPORT	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	14
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0632	NUT - 3/8"-16 x 1-1/4 BARREL w/PATCH	4
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRV	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4
BAE0936	WASHER - 3/8" I.D. x 1-1/4" O.D. FENDER	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL3270	SLIDE - SEGMENTED ENTRANCE	1
BPL3276	SLIDE - SEGMENTED EXIT	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1

UN - SLITHER SLIDE STRAIGHT SECTION - UN3207

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0632	NUT - 3/8"-16 x 1-1/4" BARREL w/PATCH	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4
BPL3271	SLIDE - SEGMENTED STRAIGHT	1

UN - SLITHER SLIDE RIGHT SECTION - UN3208

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0632	NUT - 3/8"-16 x 1-1/4" BARREL w/PATCH	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4
BPL3272	SLIDE - SEGMENTED RIGHT	1

UN - SLITHER SLIDE LEFT SECTION - UN3209

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0632	NUT - 3/8"-16 x 1-1/4" BARREL w/PATCH	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4
BPL3273	SLIDE - SEGMENTED LEFT	1

UN - SLITHER SLIDE 120° RIGHT SECTION - ZZUN3217

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0632	NUT - 3/8"-16 x 1-1/4" BARREL w/PATCH	3
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	1
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	3
BPL3274	SLIDE - 120 DEGREE RIGHT TURN	1

UN - SLITHER SLIDE 120° LEFT SECTION - ZZUN3218

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0632	NUT - 3/8"-16 x 1-1/4" BARREL w/PATCH	3
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	1
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	3
BPL3275	SLIDE - 120 DEGREE LEFT TURN	1

UN - SLITHER SLIDE ROLLER SECTION - ZZUN3219

PART NO.	DESCRIPTION	QTY.
ASY0254	SLIDE - SEGMENTED ROLLER SLIDE	1
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0632	NUT - 3/8"-16 x 1.25" BARREL w/PATCH	4
BAE06682	BOLT - 3/8"-16 x 3-1/4" BUTTON HEAD - SS	4



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Assembly View


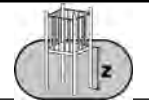




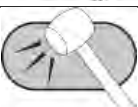
Installation Instructions

Challengers[®] Model CH4288

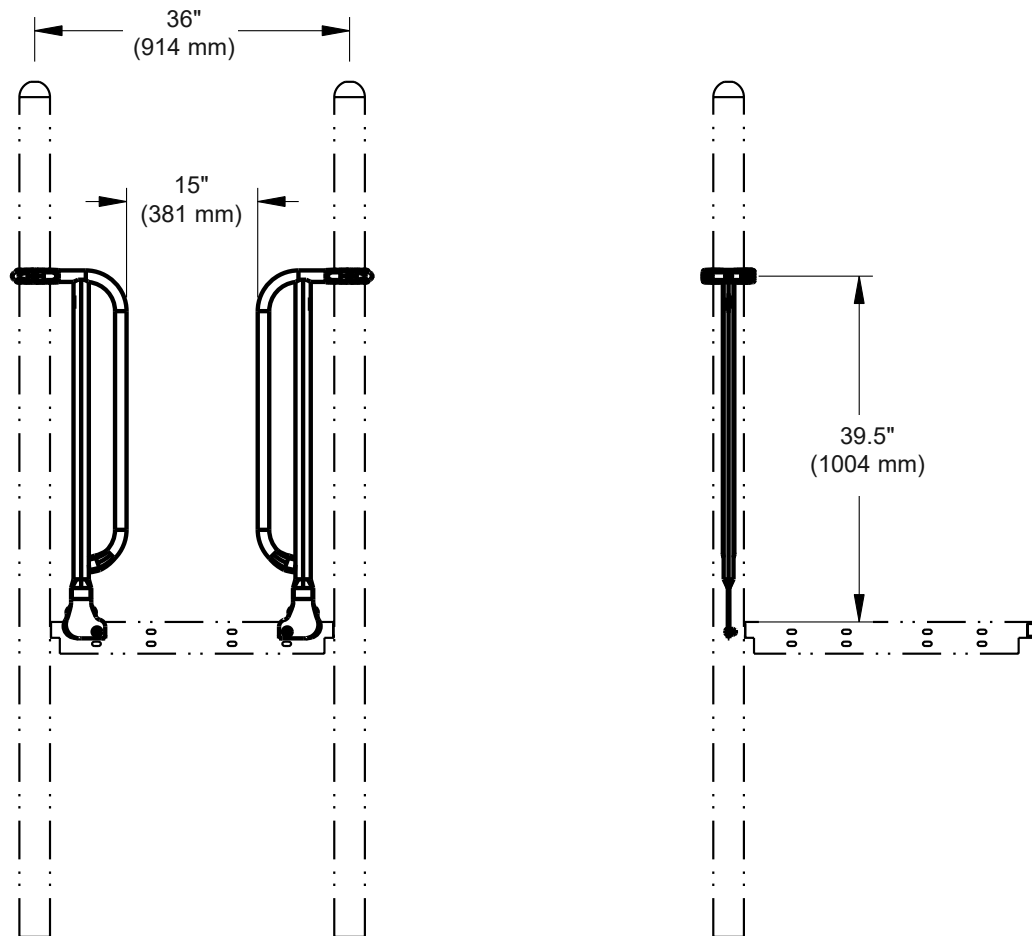
Compliance Access Gate

Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY			
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

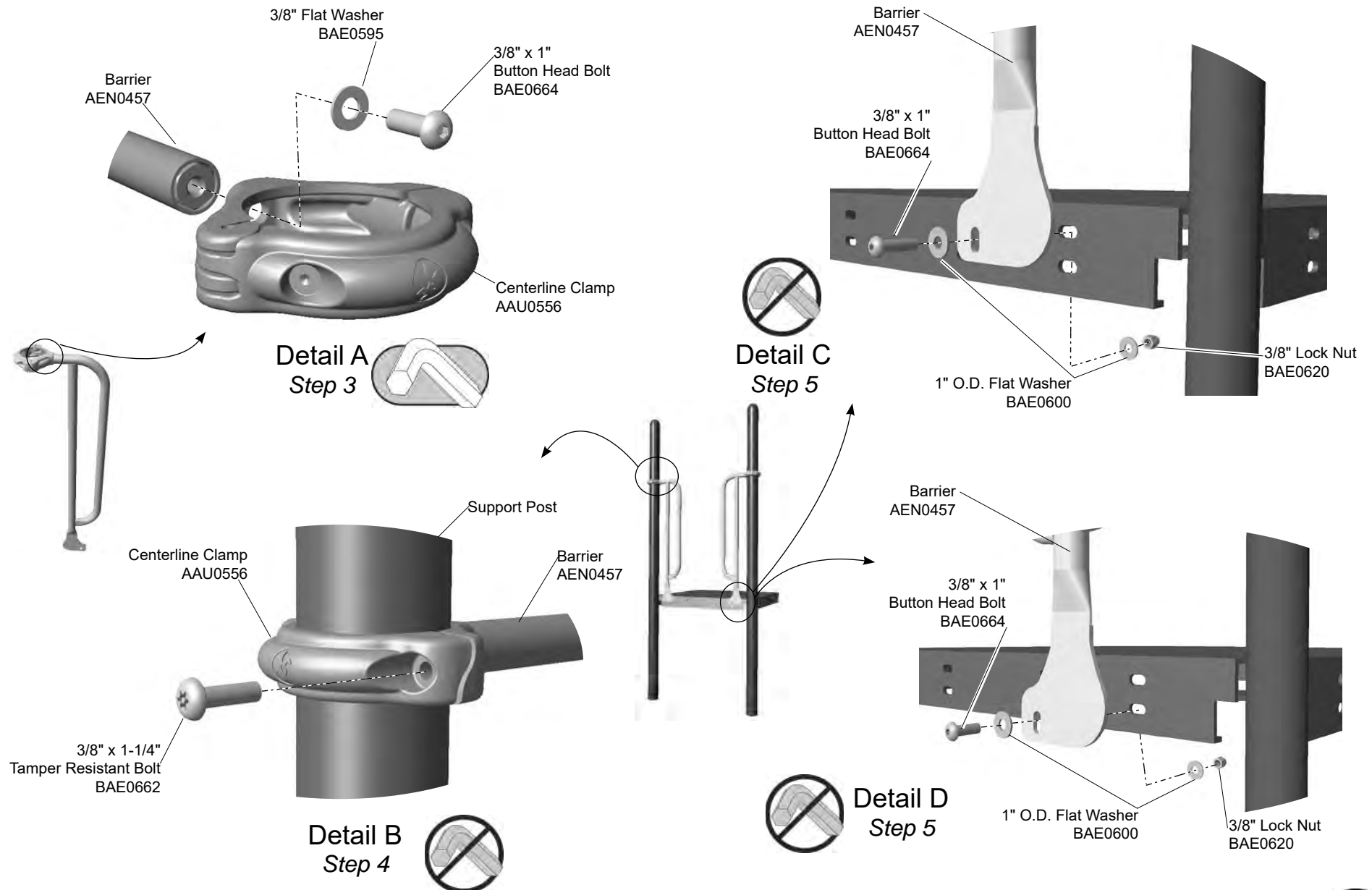
Installation Instructions



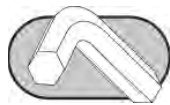
Elevation View

Installation Instructions

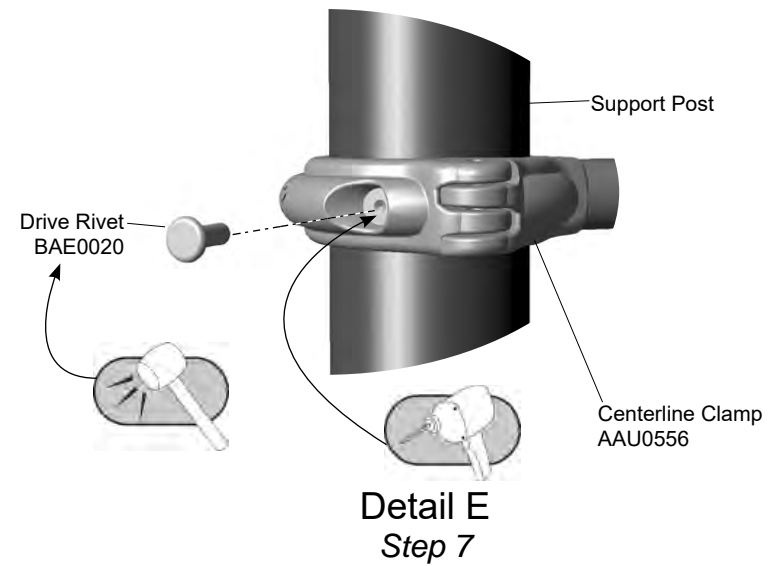
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Installation Instructions



Step 6



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

Attach the clamps to the barrier.

__Step 3: Attach the clamps to the barrier. See **Detail A**. Select both barriers, both clamps, and the appropriate hardware. There are (2) two total connections, (1) one connection per barrier. Position a clamp against the top of each barrier and attach as shown. Fully tighten the connection.

Attach the clamps to the support posts.

__Step 4: Attach the centerline clamps to the support posts. See **Detail B**. Select the appropriate hardware. There are (2) two total connections, (1) one connection per clamp. Lift each barrier into position against the deck and close each clamp around a support post. Snug tighten connection only. The location of the clamp may need to be changed to align deck connection holes or resolve clamp position conflicts.

Attach the barrier to the deck.

__Step 5: Attach the barrier to the deck. See **Detail C and D**. Select the appropriate hardware. There are (2) two total connections, (1) one connection per barrier. The gate can be connected to either set of deck holes depending on the position of adjacent clamps. Align each gate tab with either the top or bottom hole in the deck and attach as shown.

Note: Both gates should be mounted at the same height.

Final Details.

__Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 7: Install drive rivets. See **Detail E**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4288 - COMPLIANCE ACCESS GATE

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AEN0457	BARRIER - 42.07" x 7.75"	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/ NYLON CAP	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4



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Installation Instructions

Challengers® Models CH4373 and CH4374

Kaleido Barrier 44 in. Tall

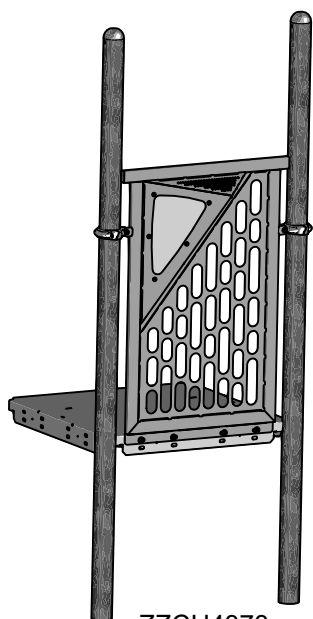
Left and Right

Installation Preparation

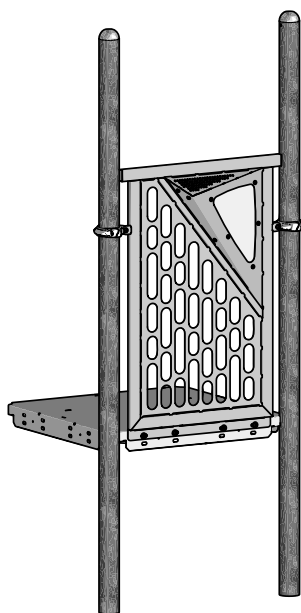
Recommended Crew: Two (2) adults

Installation Time: 1 man-hour

User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14









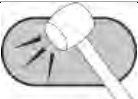
ZZCH4373
Left



ZZCH4374
Right

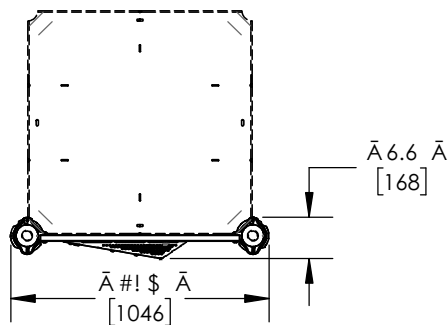
Assembly View (representative model)

ICON KEY

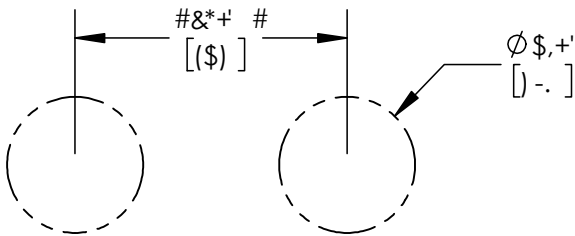
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

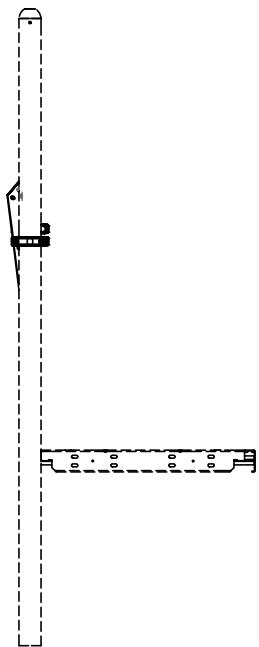
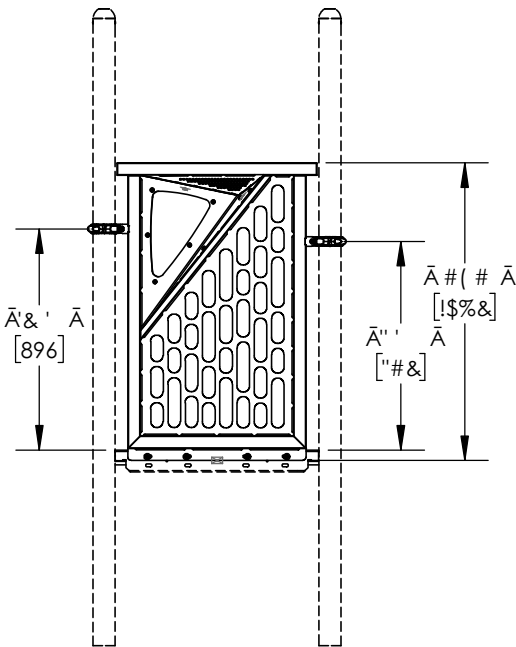
Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



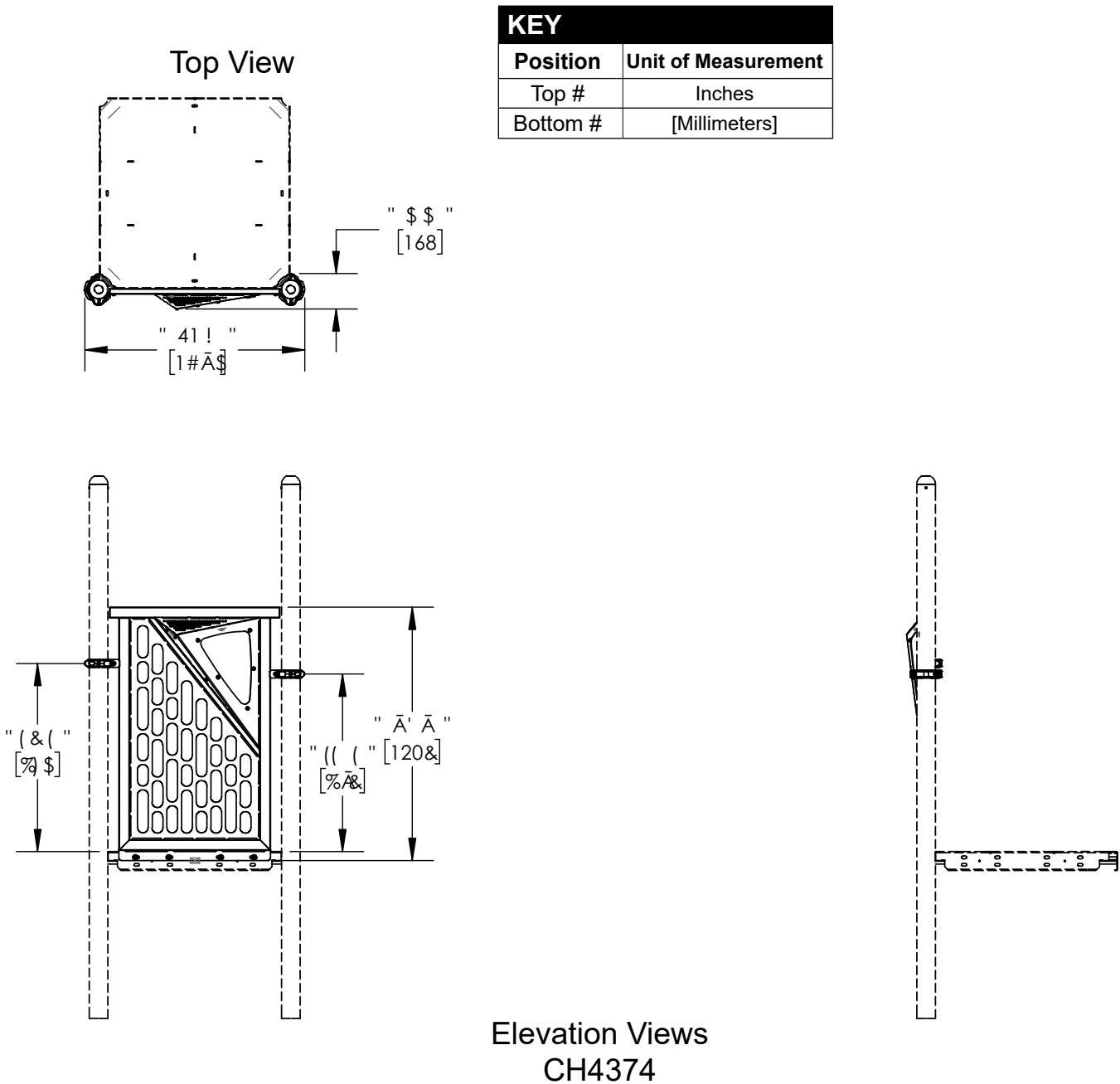
Footing Diagram
(Both Models)



Elevation Views
CH4373

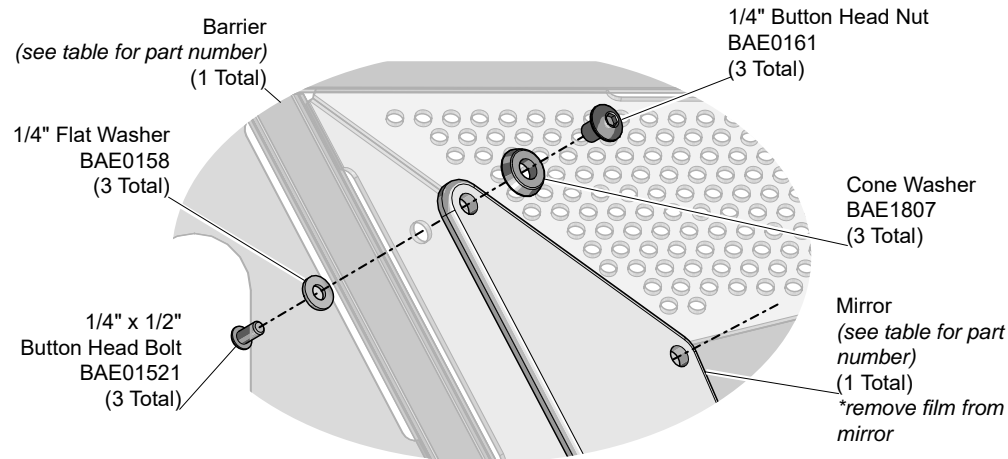


Installation Instructions



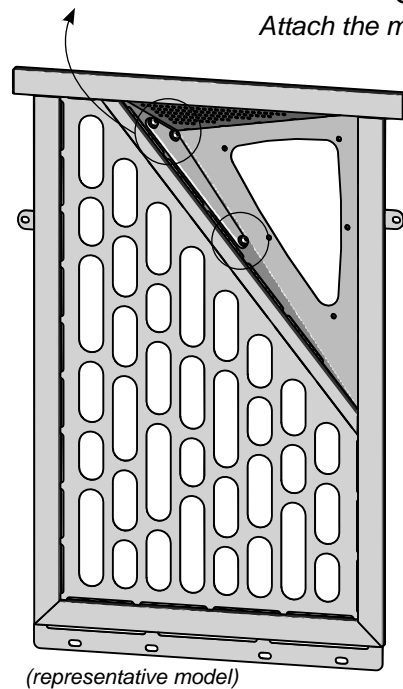
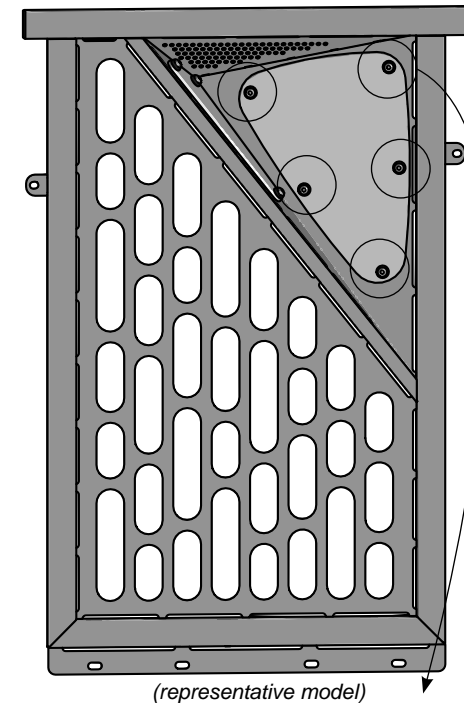
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.

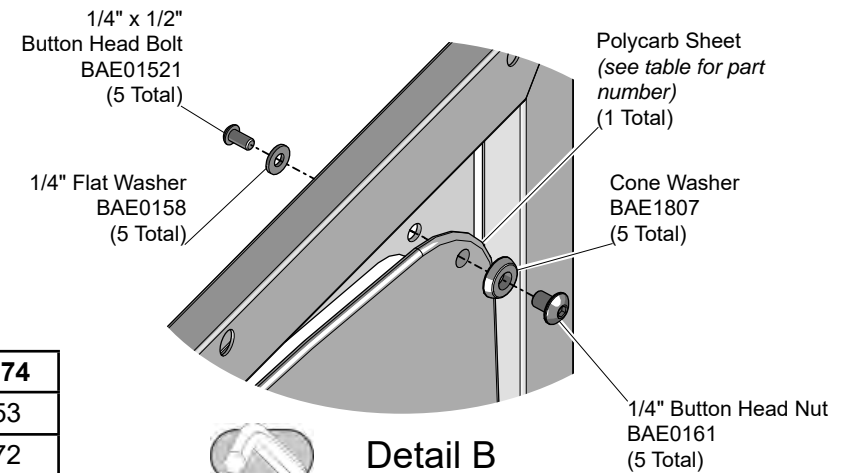


Detail A
Step 3

Attach the mirror to the barrier.



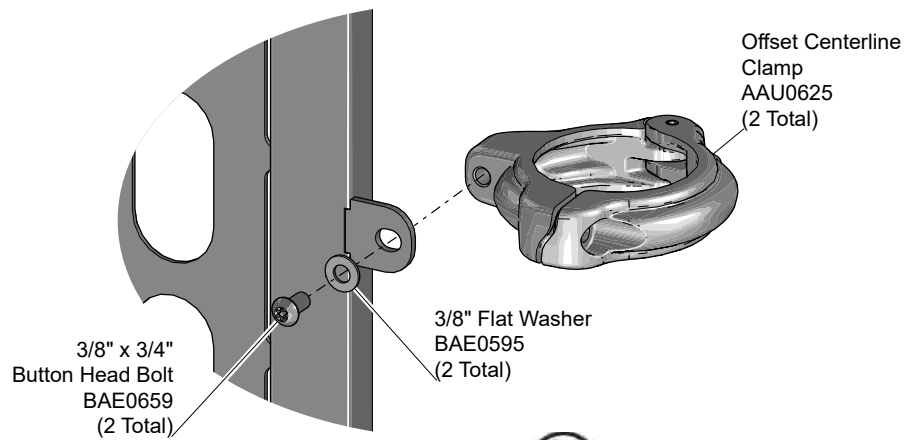
ZZ Part Number	ZZCH4373	ZZCH4374
Barrier Part Number	AFR2552	AFR2553
Mirror Part Number	BFC4271	BFC4272
Polycarb Sheet Part Number	BFC4254	BFC4254



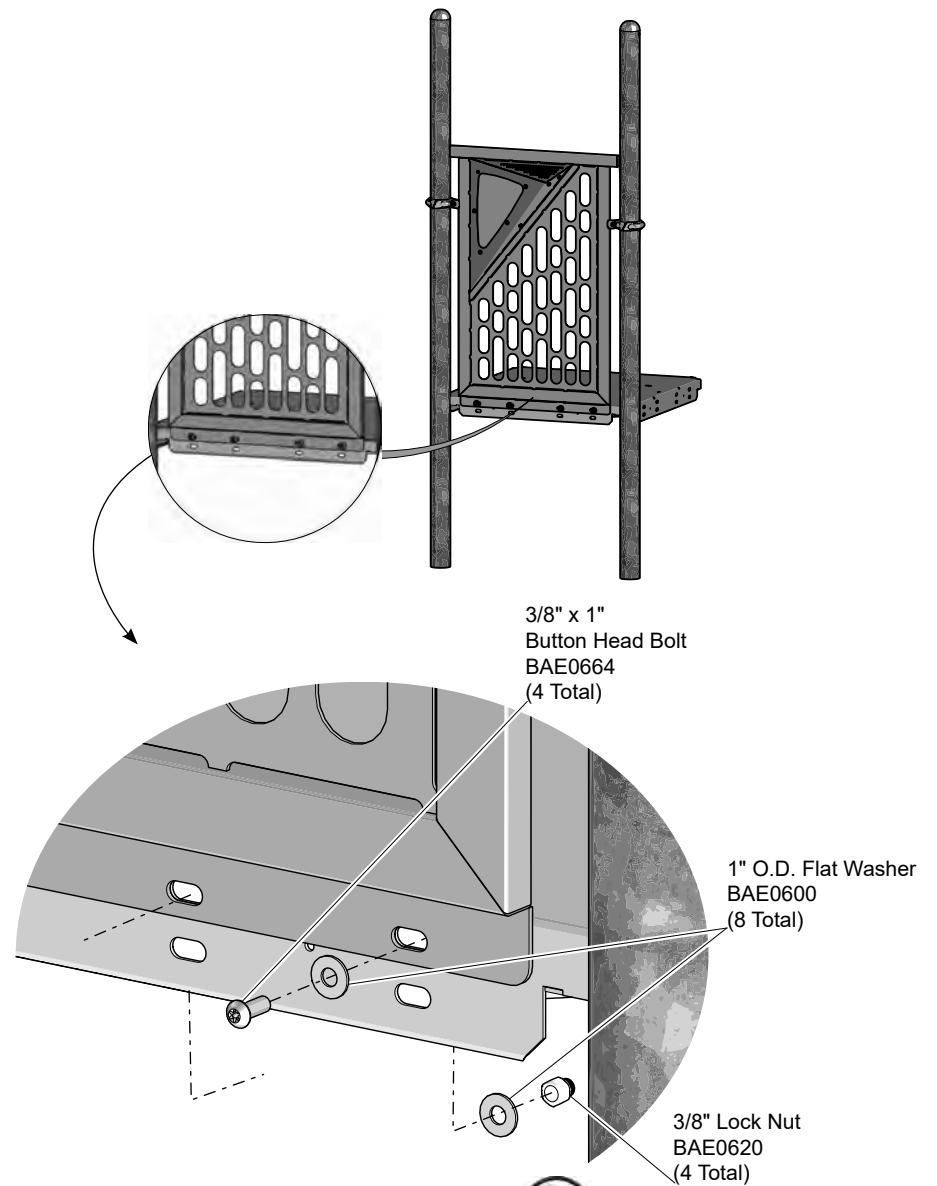
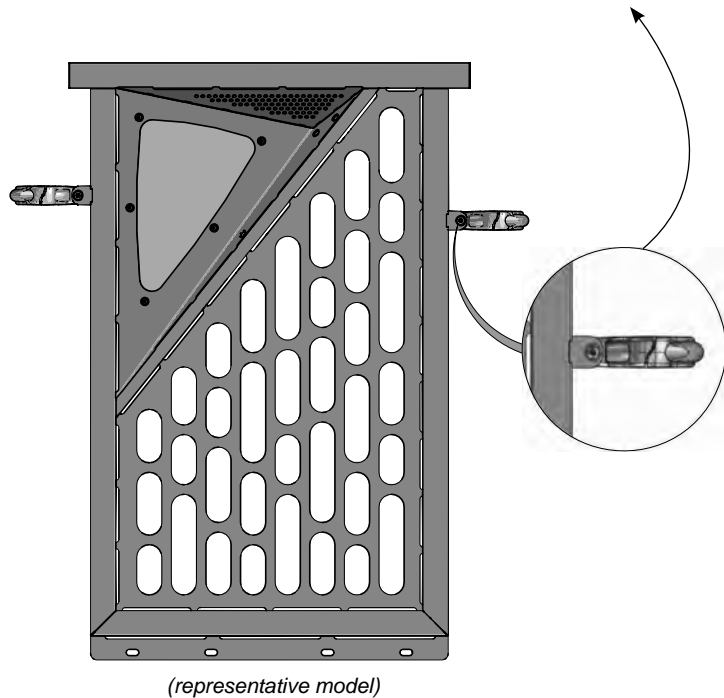
Detail B
Step 4

Attach the polycarb sheet to the barrier.

Installation Instructions

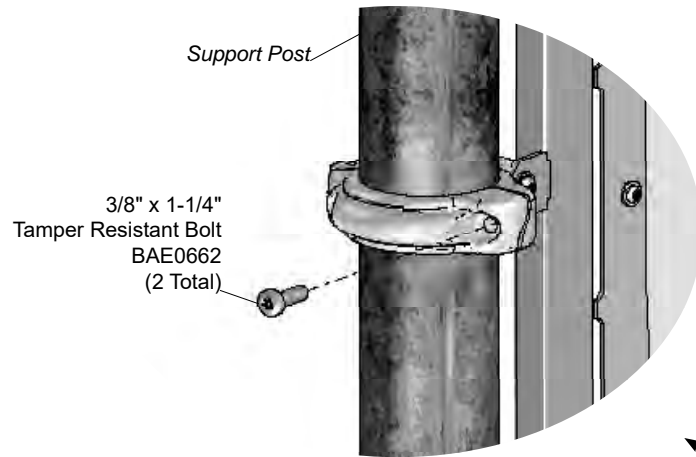


Detail C
Step 5
Attach the clamps to the barrier.



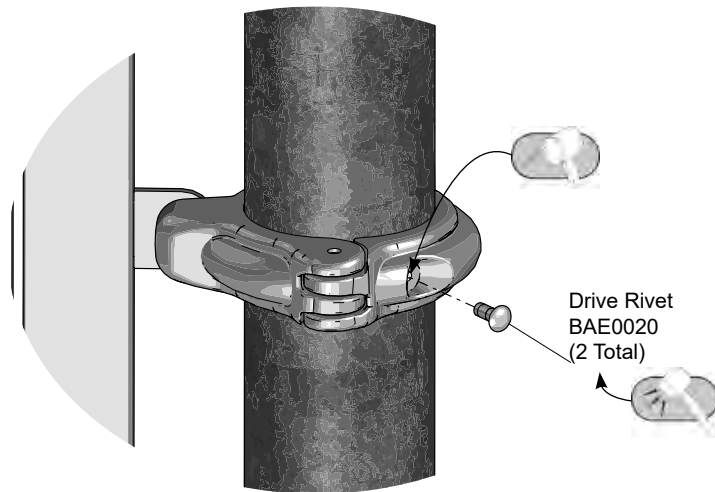
Detail D
Step 6
Attach the bottom of the barrier to the deck.

Installation Instructions



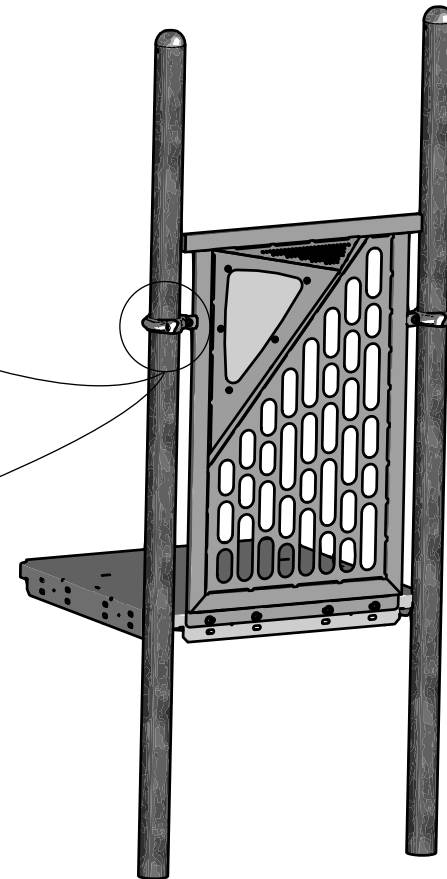
Detail E
Step 7

Attach the clamps to the support posts.



Detail F
Step 9

Secure the clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the mirror to the barrier. See **Detail A**. Position the mirror against the inside of the barrier, align the holes, and attach as shown.

Step 4: Attach the polycarb sheet to the barrier. See **Detail B**. Position the polycarb sheet against the inside of the barrier, align the holes, and attach as shown.

Step 5: Attach the clamps to the barrier. See **Detail C**. Place the clamps against the tabs on the barrier, and attach as shown.

Step 6: Attach the bottom of the barrier to the deck. See **Detail D**. Align the holes, and attach as shown.

Step 7: Attach the clamps to the support posts. See **Detail E**. With the clamps closed around the support posts, attach as shown.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 9: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and



CH4373 - KALEIDOBARRIER 44 in. TALL - LEFT

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3.50" OFFSET CENTERLINE DIE CAST	2
AFR2552	FRAME - 47.44" x 31.87" x 3.78"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	8
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	4
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	8
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	8
BFC4254	COLOR POLYCARB - 17.63" x 11.55" x .25"	1
BFC4271	MIRROR - 12.81" x 2.11" x .25"	1

CH4374 - KALEIDOBARRIER 44 in. TALL - RIGHT

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3.50" OFFSET CENTERLINE DIE CAST	2
AFR2553	FRAME - 47.44" x 31.87" x 3.78"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	8
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	4
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	8
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	8
BFC4254	COLOR POLYCARB - 17.63" x 11.55" x .25"	1
BFC4272	MIRROR - 2.11" x 12.81" x .25"	1





Assembly View

Installation Instructions







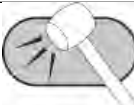

Challengers® Model CH4406

Accessible Driving Panel

Installation Preparation

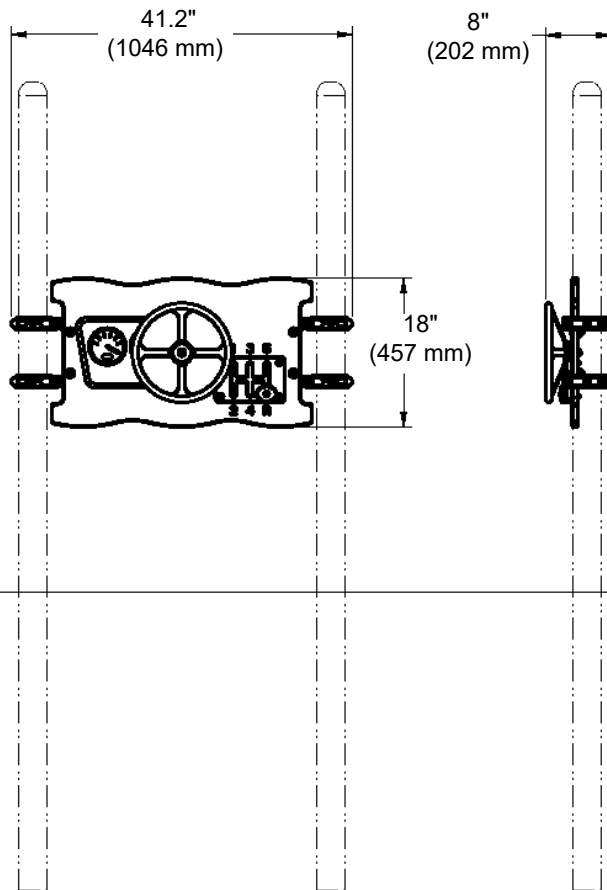
Recommended Crew: One (1) adult
 Installation Time: 0.5 hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

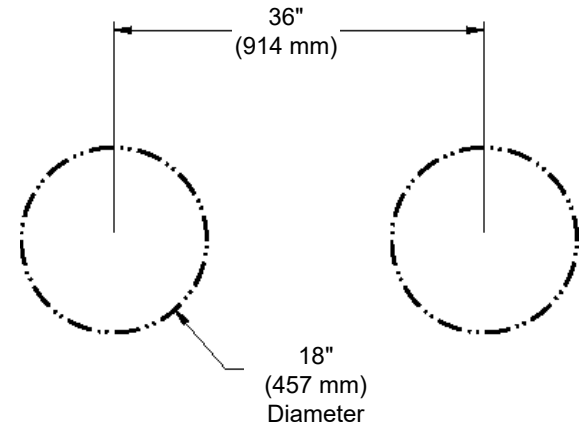
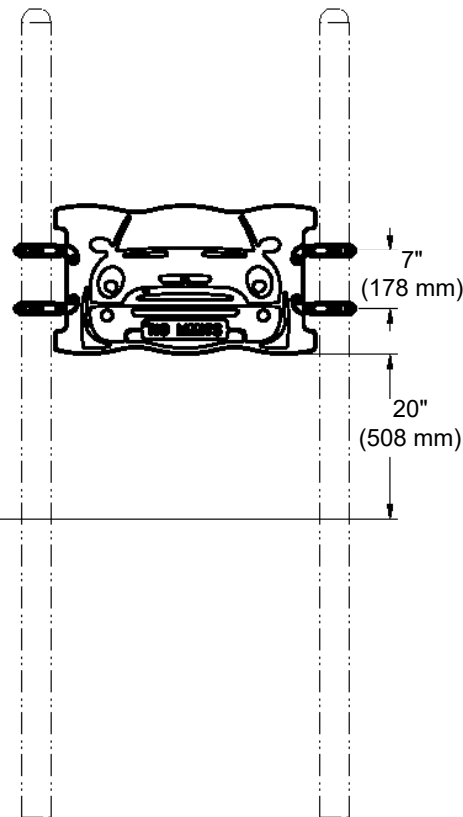
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		Add 1 Drop of Thread Locking Adhesive

Installation Instructions

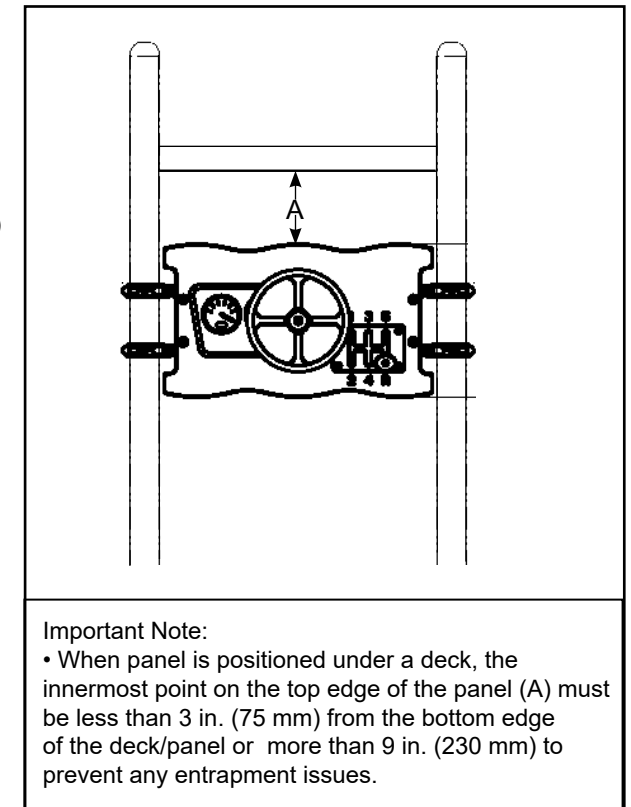
Top View



Footing Diagram



Elevation Views



Installation Instructions

Note:

When panel is used as a guardrail, the maximum deck height above surfacing is:

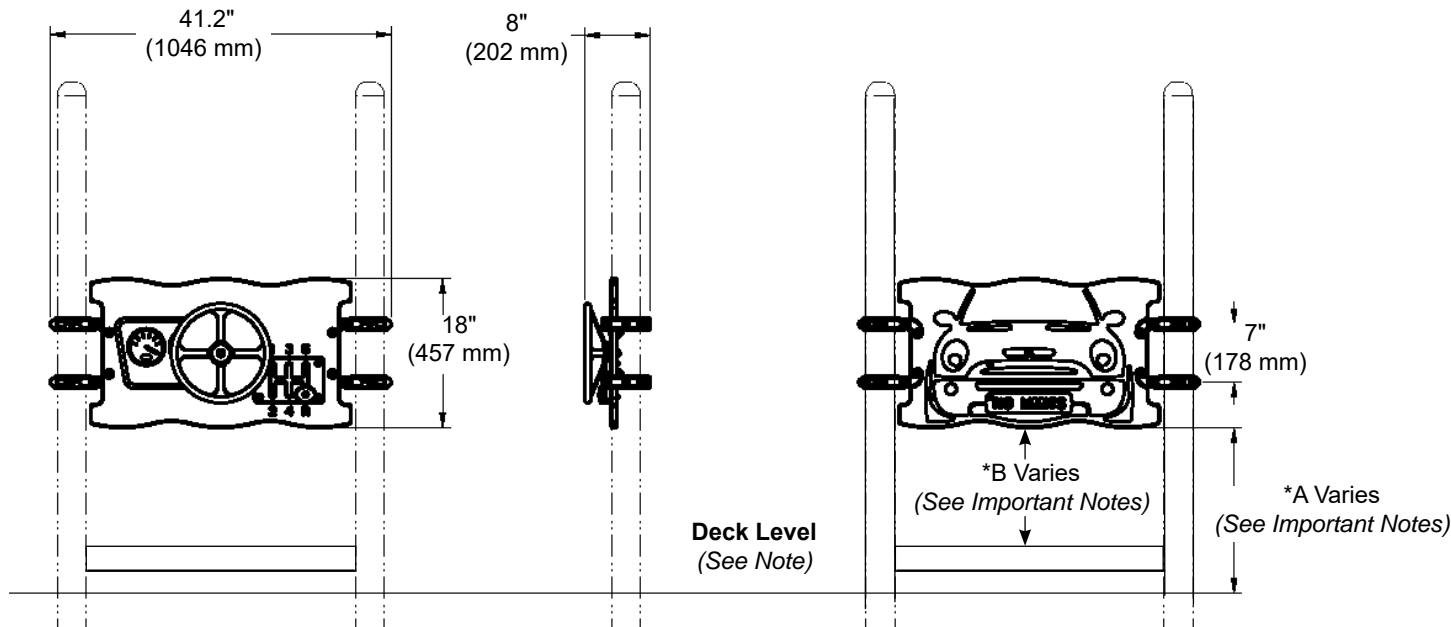
- 30" (762 mm) for 2 to 5 years old.
- 48" (1219 mm) for 5 to 12 years old.

Deck / Platform Installation

*Important Notes:

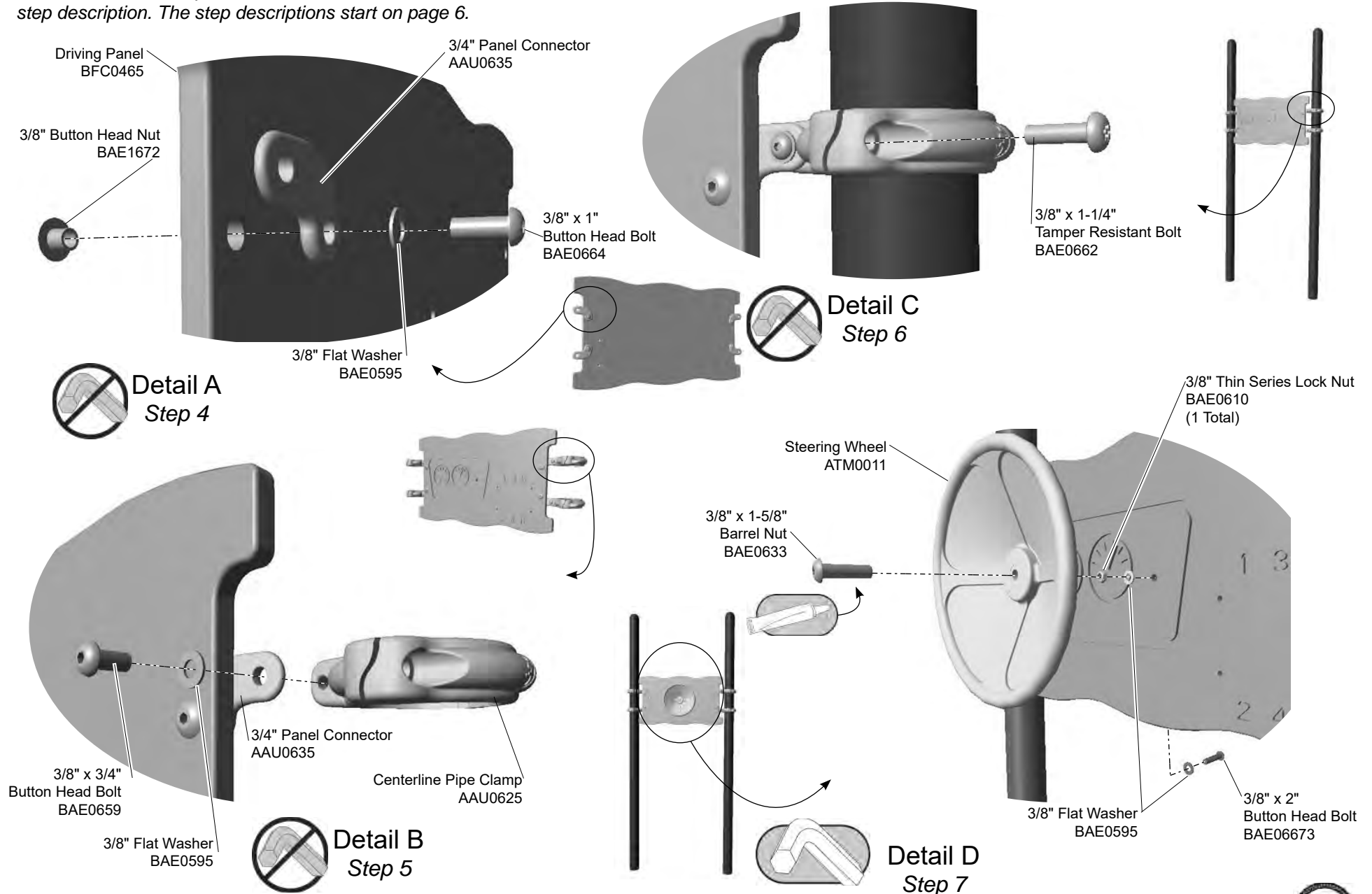
When panel is used as a guardrail, the minimum height requirements must be maintained to prevent unintentional falls from a platform.

- Ages 2 to 5 years old: The top (A) innermost surface of the guardrail should be at least 29" (737 mm) high and the lower (B) innermost edge should be no more than 23" (584 mm) above the platform.
- Ages 5 to 12 years old: The top (A) innermost surface of the guardrail should be at least 38" (965 mm) high and the lower (B) outermost edge should be no more than 28" (711 mm) above the platform.

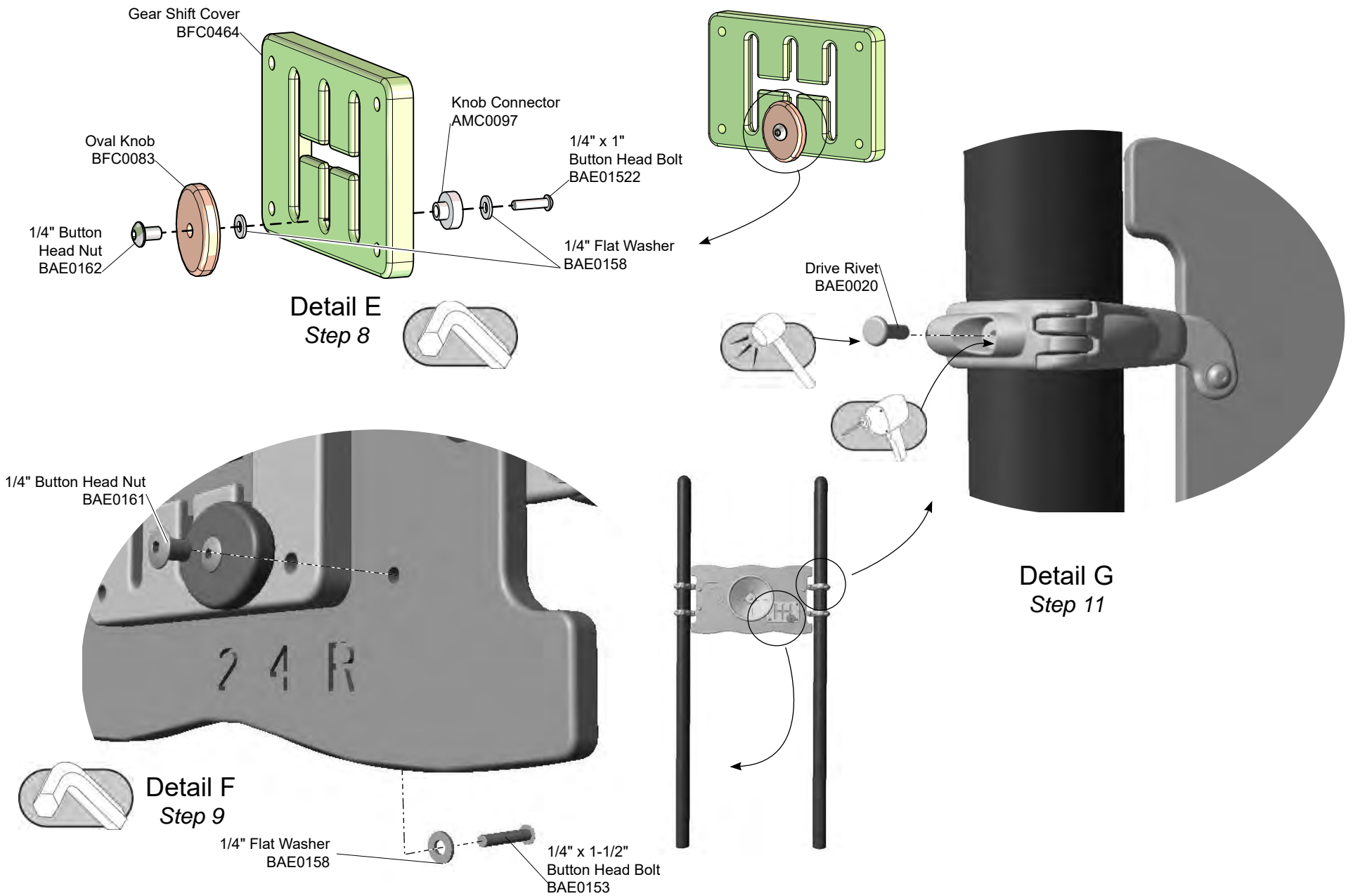


Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete. .

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine location of the panel by referring to the master structure layout drawing. Decide the orientation of the panel - an automobile is routed on one side and a dashboard on the other.

Attach the panel connectors to the panel.

Step 4: Attach the panel connectors to the panel. See **Detail A**. Select the accessible driving panel, the panel connectors, and the appropriate hardware. There are (4) four connections. Each panel connector looks like an 'L'. Position each panel connector so that the short leg points down on the upper connections and up on the lower connections. The long leg should point out away from the panel. The panel connectors must all attach to the same side of the panel (this side will face in). Align the connectors with the holes and attach as shown. Leave the connections loose.

Step 5: Attach the clamps to the panel connectors. See **Detail B**. Select the clamps and the appropriate hardware. There are (4) four connections. Place the flat side of each clamp against the outside of the panel connector. Attach as shown. Leave the connections loose for alignment adjustment.

Attach the panel to the support posts.

Step 6: Attach the panel to support posts. See **Detail C** and **Elevation View**. Select the clamps and the appropriate hardware. There are (4) four connections. Move the panel into position on the outside of the posts and close the clamps. Attach as shown.

Note: In the event of a clamp conflict with an adjacent component, the panel connector can be flipped upside down and reconnected to the panel. Remove the clamps before flipping connector and reattach as before on the panel side. Both of the clamps should be mounted at the same height.

Important Note: The long portion of the panel connector must be level to prevent any string entanglement issues.

Attach the steering wheel to the panel.

Step 7: Attach the steering wheel to the panel. See **Detail D**. Select the steering wheel and the appropriate hardware. There is (1) one connection. Apply a drop of thread locking adhesive to the barrel nut threads, and attach as shown. Fully tighten the connection. The steering wheel should still turn freely.

Attach the gear shift to the panel.

Step 8: Assemble the gear shift. See **Detail E**. Attach as shown. Fully tighten the connection; being careful not to exceed the torque recommendations. Move the knob through the gear shift cover plate to ensure freedom of movement.

Step 9: Attach the gear shift to the panel. See **Detail F**. Select the gear shift assembly and the appropriate hardware. There are (4) four connections. With the knob side facing out, position the gear shift assembly between the numbers on the "dashboard" side of the panel and align holes. Attach as shown. Fully tighten the connections. The gear shift should still move smoothly on the plate.

Installation Instructions

Final Details.

__Step 10: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 11: Install drive rivets. See **Detail G**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

__Step 12: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the side panel at eye level.



CH4406 - ACCESSIBLE DRIVING PANEL

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3.50" OFFSET CENTERLINE DIE CAST	4
AAU0635	CONNECT - 3/4" PANEL	4
AMC0097	CONNECTOR - 1" DIA x .57" w/HOLE	1
ATM0011	WHEEL - STEERING w/ COUNTERBORE AND BEARINGS	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0153	BOLT - 1/4"-20 x 1.50" BUTTON HEAD - SS	4
BAE0158	WASHER - 1/4" SAE FLAT	6
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	4
BAE0162	NUT - 1/4"-20 x 9/16" BUTTON HEAD	1
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0610	NUT - 3/8"-16 THIN LOCK	1
BAE0633	NUT - 3/8"-16 x 1.63 BARREL	1
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	4
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8
BAE01522	BOLT - 1/4"-20 x 1.00" BUTTON HEAD - SS	1
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	4
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	1
BFC0083	SHEET - OVAL KNOB	1
BFC0464	SHET - .75" x 5.50" x 8.50" COVER	1
BFC0465	SHEET - .75" x 31.50" x 18.00" ACCESS DRIVING PANEL	1



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Assembly View

Installation Instructions


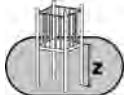





Challengers® Model CH4409

Accessible Bell Panel

Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

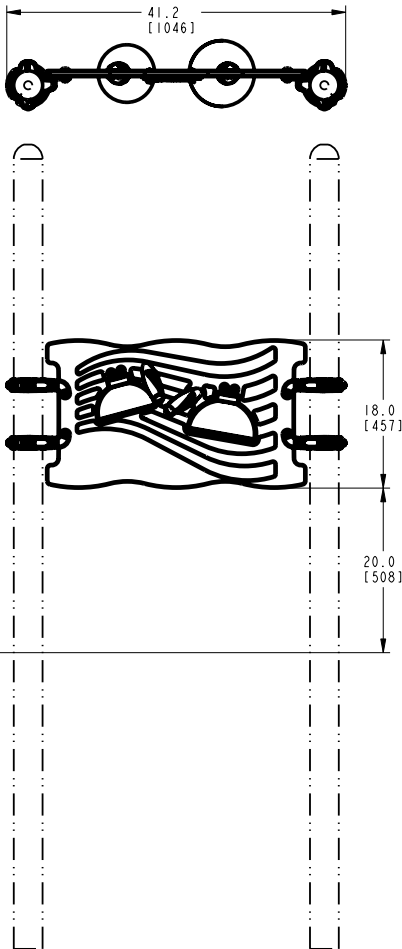
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

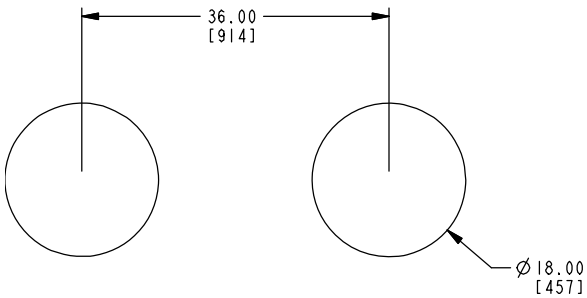
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

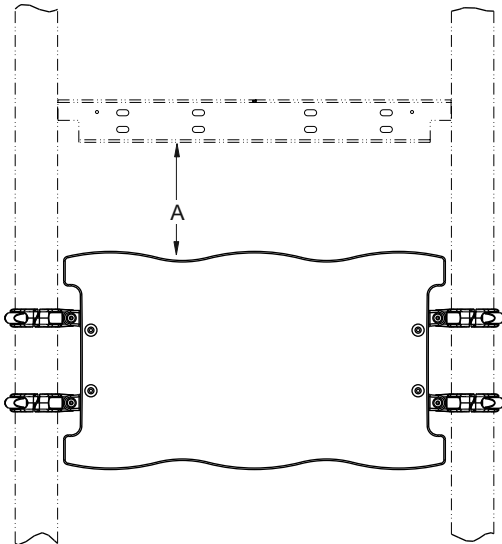
Top View



Elevation Views



Footing Diagram



Important Note:

- When panel is positioned under a deck, the innermost point on the top edge of the panel (A) must be less than 3 in. (76 mm) from the bottom edge of the deck/panel or more than 9 in. (230 mm) to prevent any entrapment issues.



Installation Instructions

Note:
When panel is used as a guardrail, the maximum deck height above surfacing is:

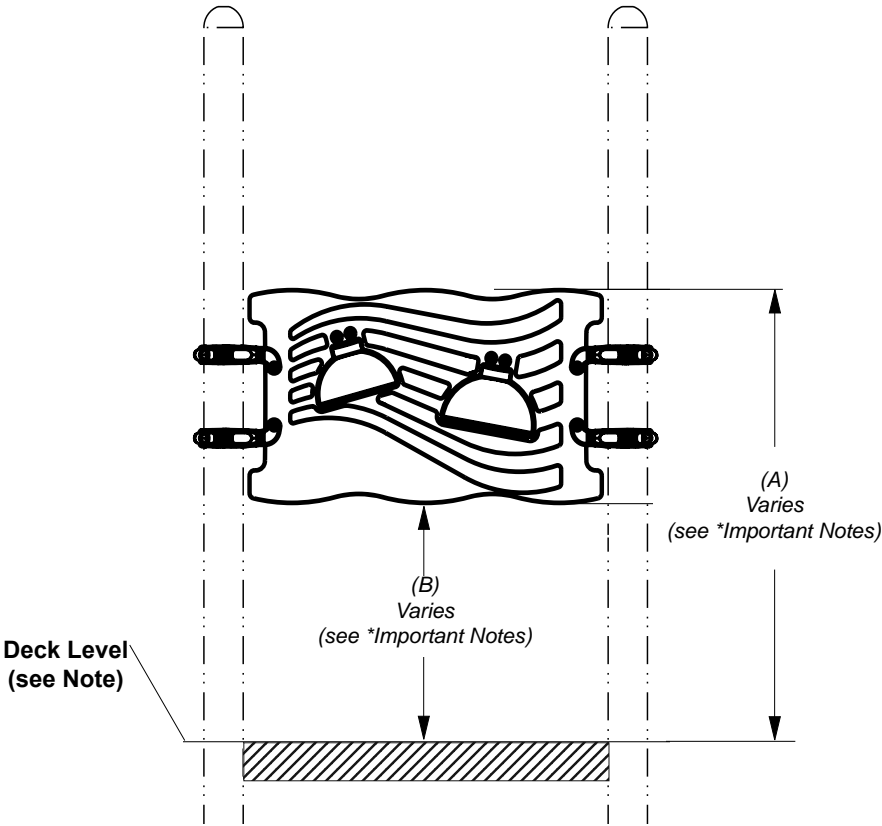
- 30" (762 mm) for 2 to 5 years old.
- 48" (1219 mm) for 5 to 12 years old.

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Deck/Platform Installation

***Important Notes:**
When panel is used as a guardrail, the minimum height requirements must be maintained to prevent unintentional falls from a platform.

- Ages 2 to 5 years old: The top (A) innermost surface of the guardrail should be at least 29" (737 mm) high and the lower (B) outermost edge should be no more than 23" (584 mm) above the platform.
- Ages 5 to 12 years old: The top (A) innermost surface of the guardrail should be at least 38" (965 mm) high and the lower (B) outermost edge should be no more than 28" (711 mm) above the platform.

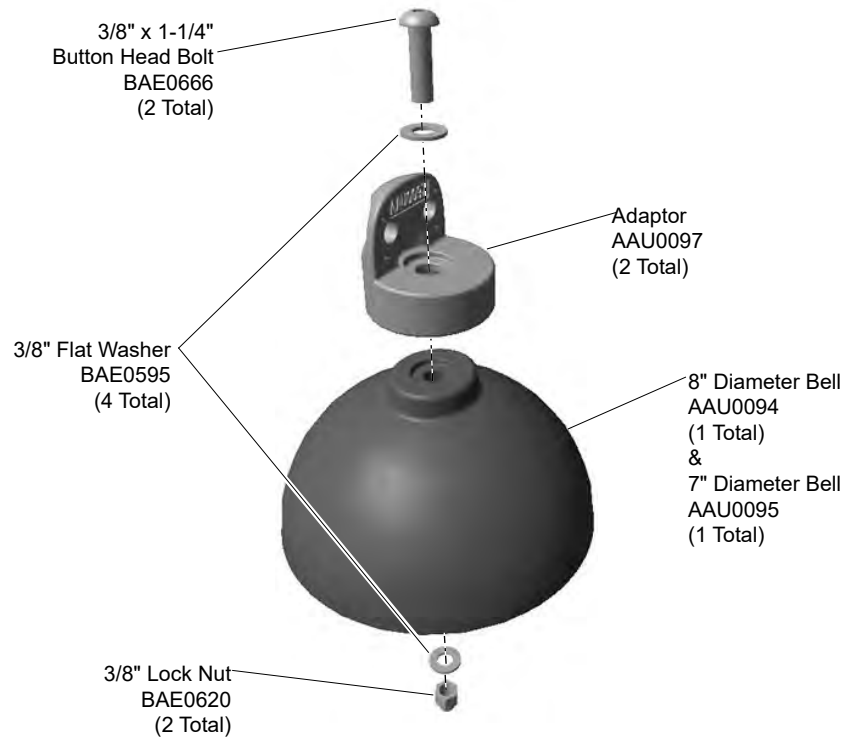


Deck/Platform Elevation Views



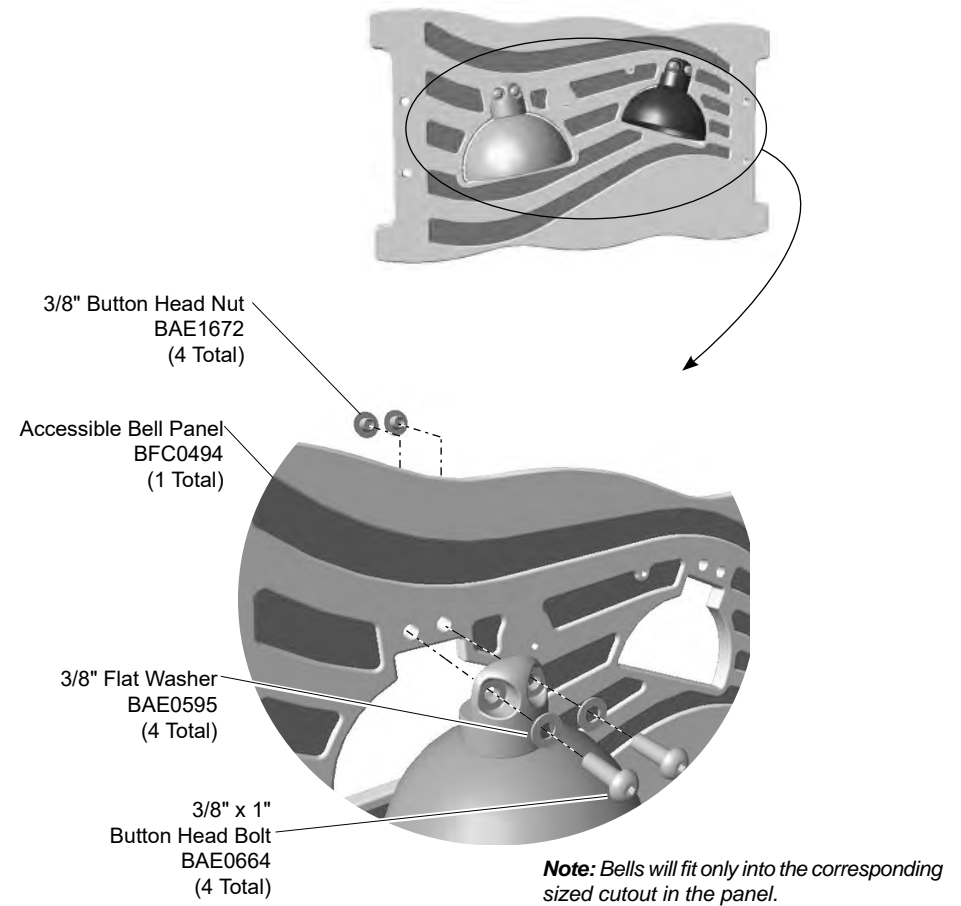
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Detail A Step 3

Assemble the bells.

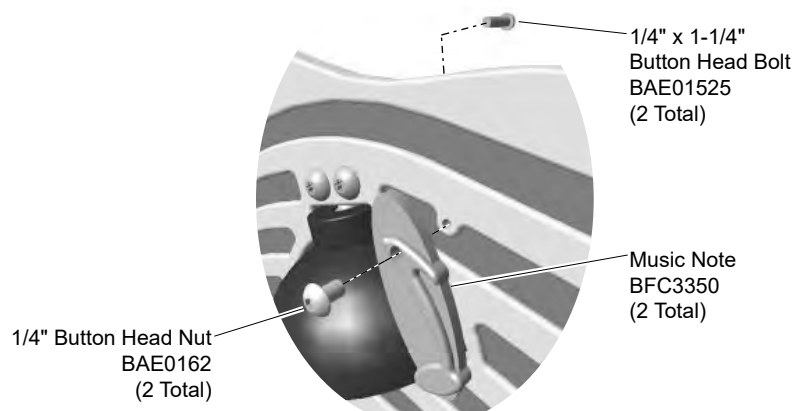


Detail B Step 4

Attach the bells to the panel.

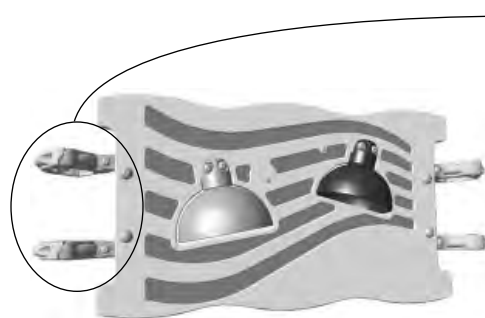
Installation Instructions

Note: Attach the music notes on the opposite side of the panel from where the bell adaptors are mounted.



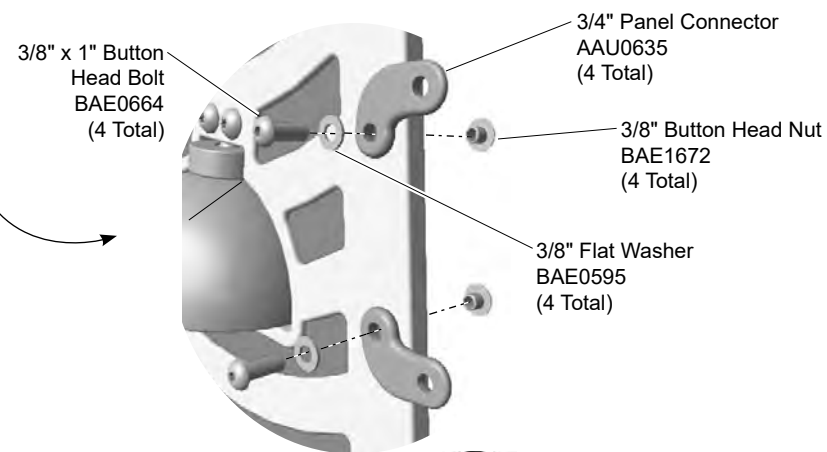
Detail C
Step 5

Attach the music notes (bell strikers) to the bell panel.



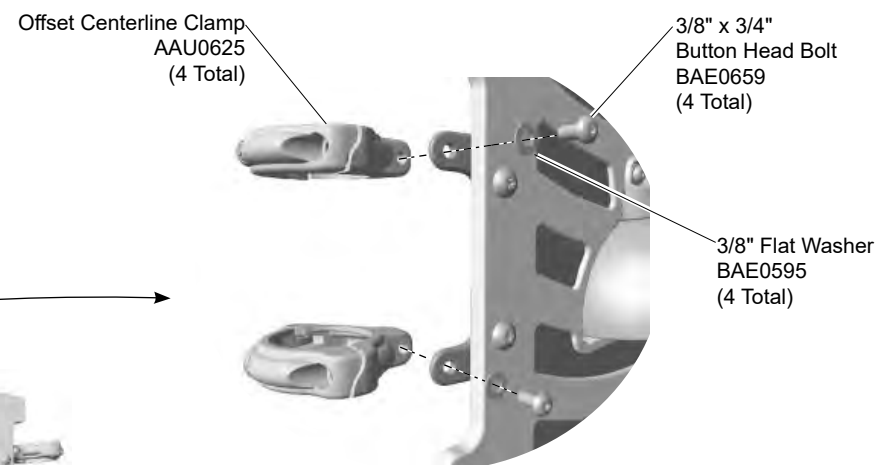
Detail E
Step 7

Attach the clamps to the panel connectors.

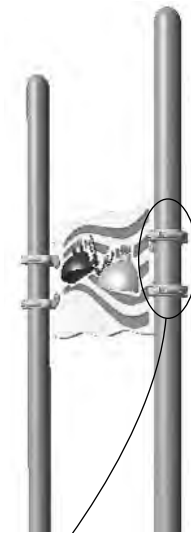
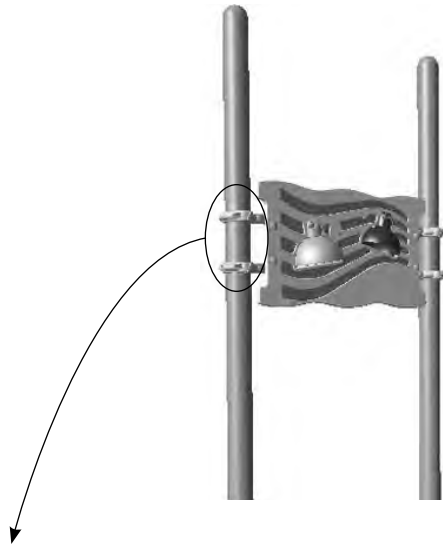


Detail D
Step 6

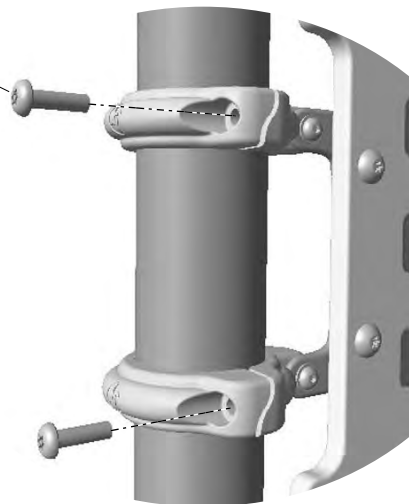
Attach the panel connectors to the bell panel.



Installation Instructions



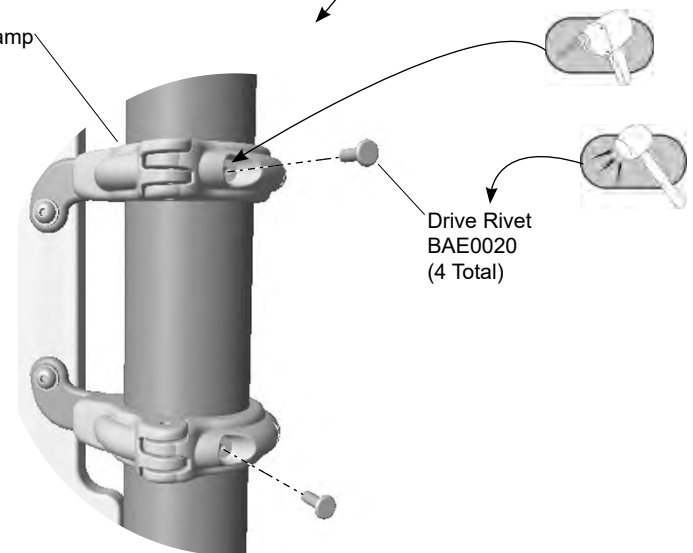
3/8" x 1-1/4" Tamper
Resistant Bolt
BAE0662
(4 Total)



Detail F
Step 8

Attach the clamps to the support posts.

Offset Centerline Clamp



Drive Rivet
BAE0020
(4 Total)

Detail G
Step 10

Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Assemble the bells. See **Detail A**. Position each adaptor on top of a bell and attach as shown. Fully tighten the connection according to tightening torque specifications (See **Final Details**).

Step 4: Attach the bells to the panel. See **Detail B**. Position the bells into their corresponding cutouts in the panel and attach as shown. Fully tighten the connection according to tightening torque specifications (See **Final Details**).

Step 5: Attach the music notes (bell strikers) to the bell panel. See **Detail C**. Position the music notes on the opposite side of the panel from where the bell adaptors are mounted and attach as shown.

Step 6: Attach the panel connectors to the panel. See **Detail D**. Position the connectors against the upper and lower side holes in the panel and attach as shown.

Step 7: Attach the clamps to the panel connectors. See **Detail E**. Position the flat side of each clamp against the open end of a panel connector, and attach as shown.

Step 8: Attach the panel to the support posts. See **Detail F**. Position the clamps around the post at the height shown in the **Elevation View**, and attach as shown. See **Important Notes** on **pages 2 and 3** if the panel is being mounted beneath a deck or if being used as a guardrail.

Note: In the event of a clamp conflict with an adjacent component, the panel connector can be rotated and reconnected to the panel. Remove the clamps before rotating the connector and reattach as before.

Important Note: The long portion of the panel connector must be level to prevent any string entanglement issues.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 10: Install drive rivets. See **Detail G**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

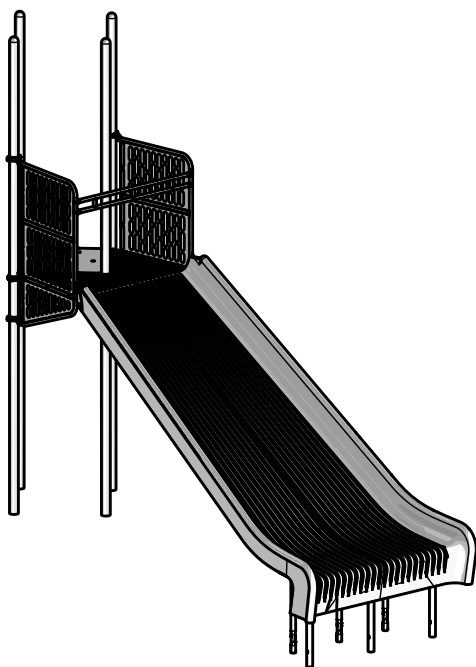
CH4409 - ACCESSIBLE BELL PANEL

PART NO.	DESCRIPTION	QTY.
AAU0094	MISC - 8.00" DIA. x 4.38" BELL	1
AAU0095	MISC - 7.00" DIA. x 3.88" BELL	1
AAU0097	MISC - 2.50" DIA. x 2.52" ADAPTER	2
AAU0625	CLAMP - 3-1/2" OFFSET CENTERLINE DIE CAST	4
AAU0635	CONNECT - 3/4" PANEL	4
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE01525	BOLT - 1/4"-20 x 1-1/4" BUTTON HEAD - SS	2
BAE0162	NUT - 1/4"-20 x 9/16" BUTTON HEAD	2
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0620	NUT - 3/8"-16 LOCK w/ NYLON CAP	2
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	4
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	8
BFC0494	SHEET - .75" x 31.50" x 18.00" ACCESS. BELL PANEL	1
BFC3350	SHEET- MUSIC NOTE	2



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH4696 and CH4696S

Mighty Descent







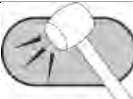
In-ground and Surface Mount

Installation Preparation

Recommended Crew: Three (3) adults
 *minimum of six (6) adults required for placement of slide

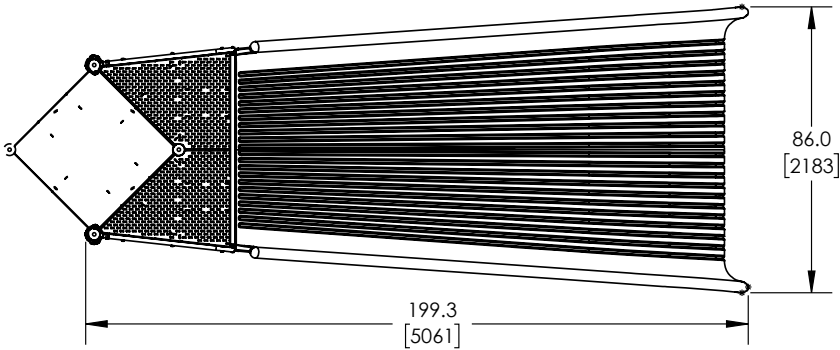
Installation Time (In-Ground): 7 man-hours
 Installation Time (Surface Mount): 3.5 man-hours
 Concrete Required: 0.18 cubic yard (0.12 cubic meters)
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

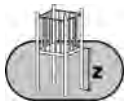
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

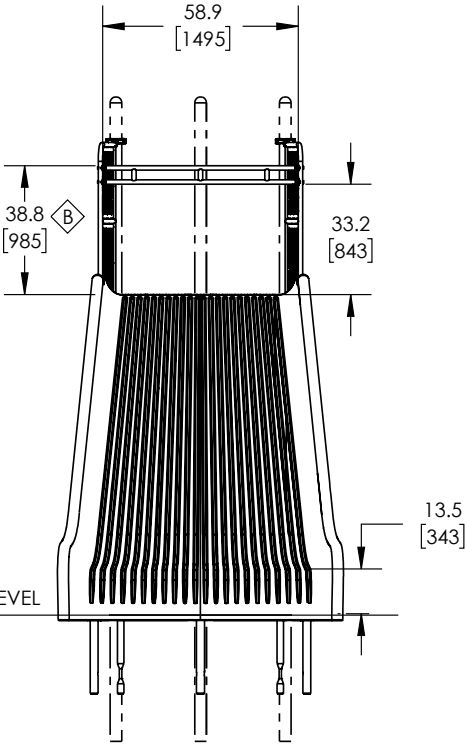
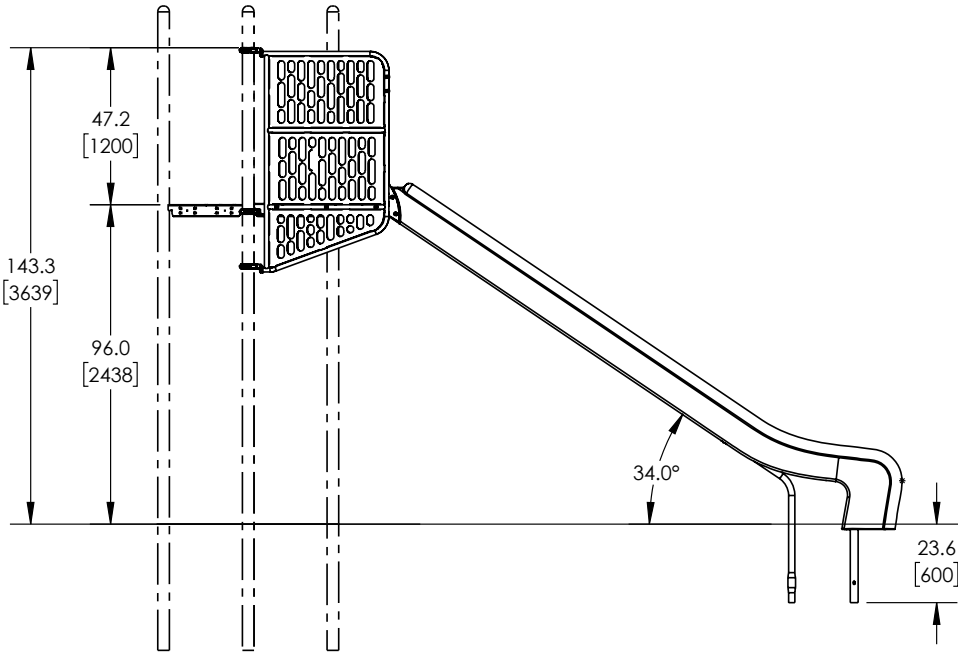
Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



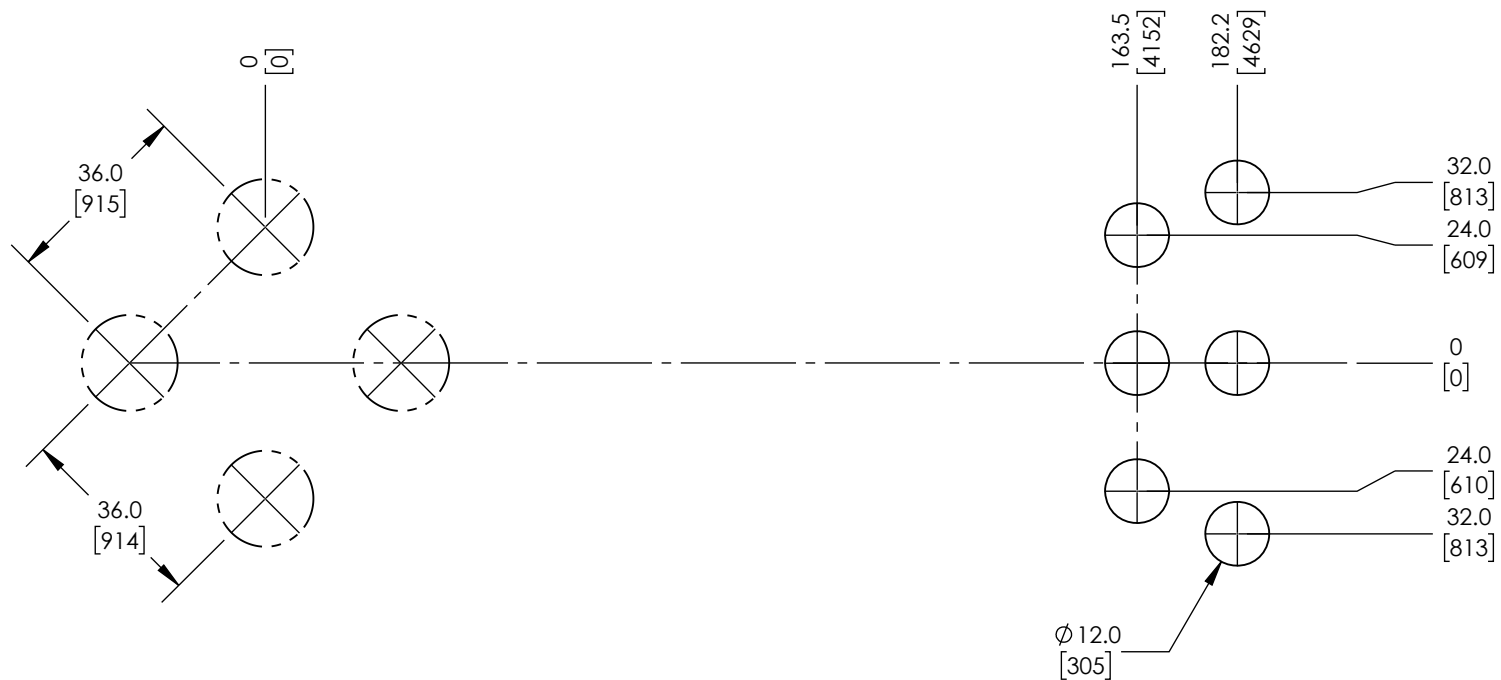
Height of the deck



Elevation Views
CH4696

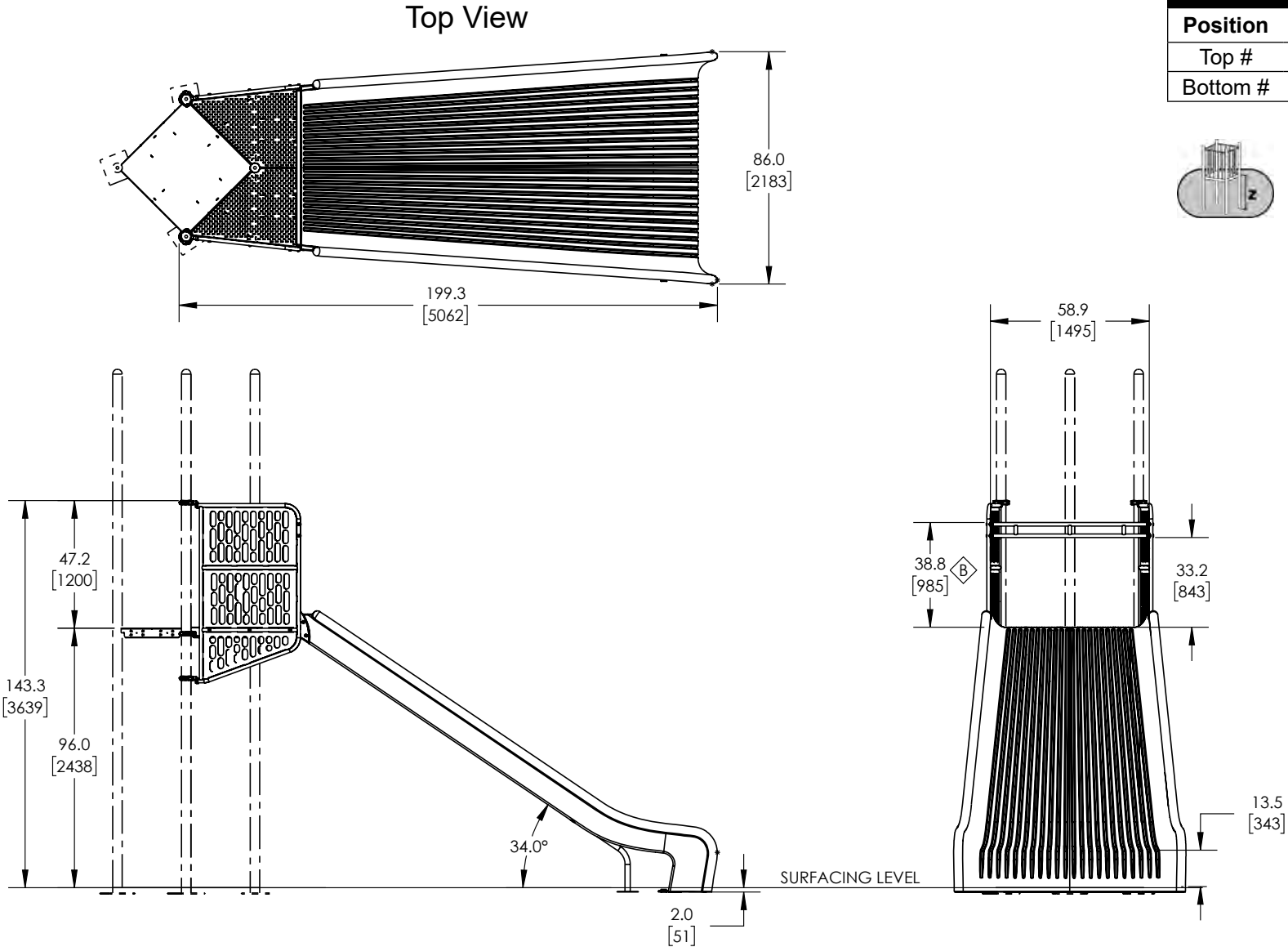


Installation Instructions

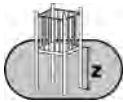


Footings Diagram

Installation Instructions



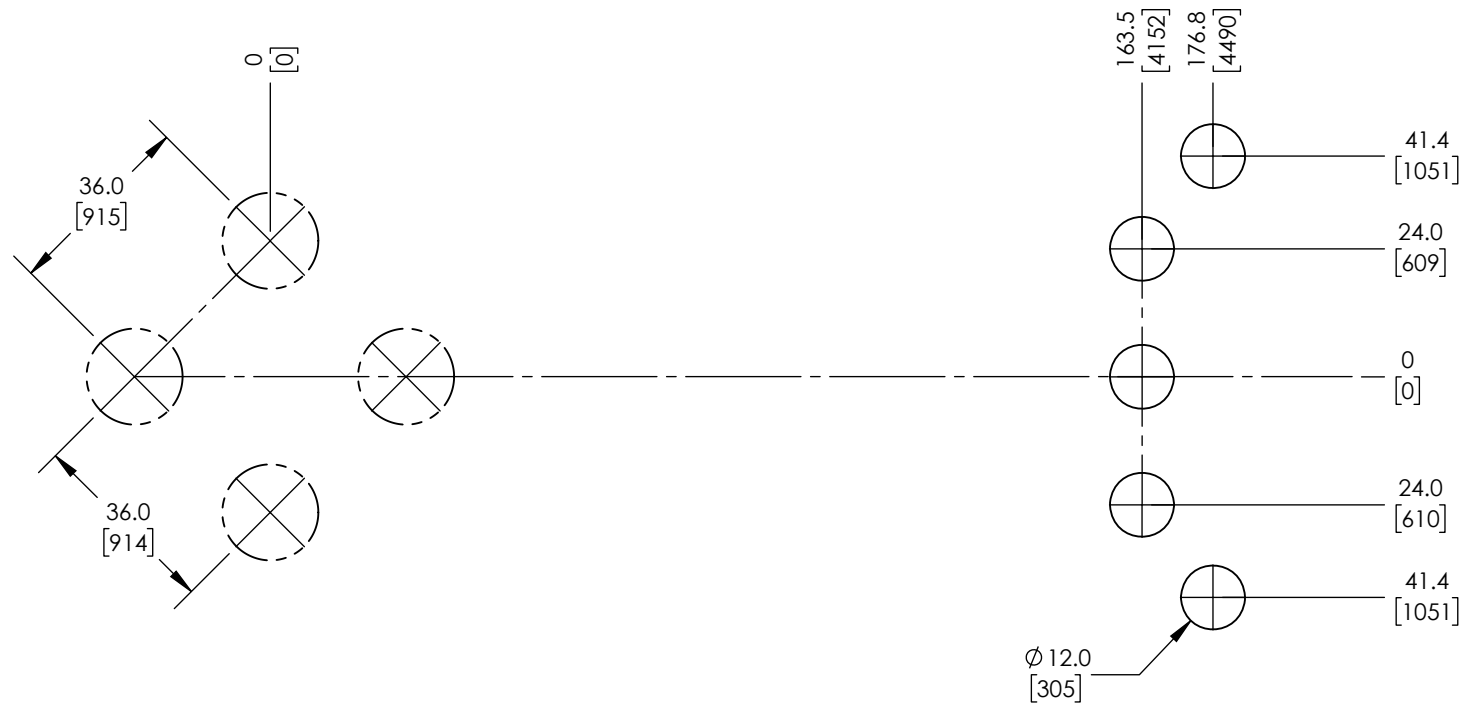
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Height of the deck

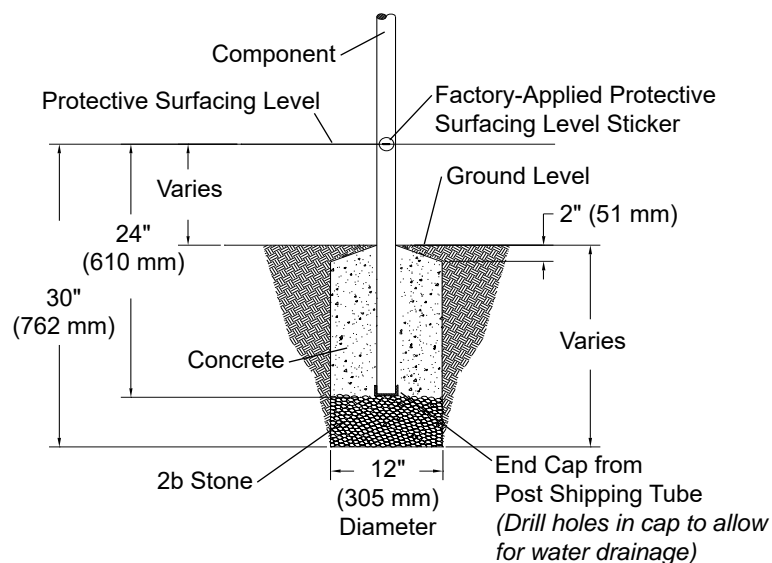


Installation Instructions



Footing Diagram
CH4696S

Installation Instructions



Component Footing Detail (ASTM/CSA)

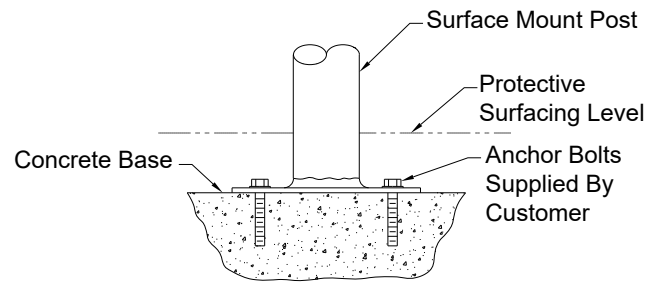
FOOTING NOTES

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

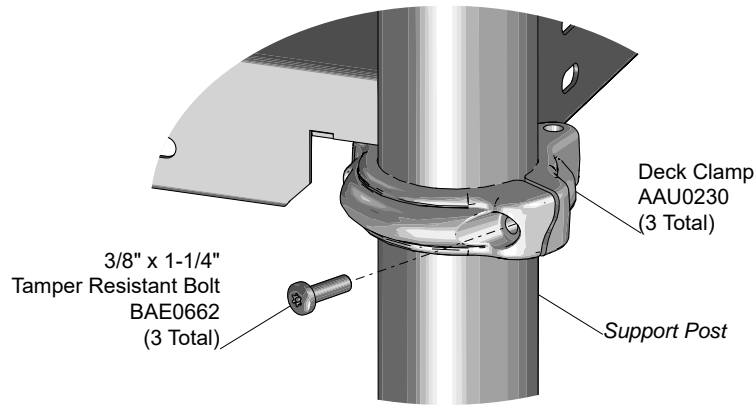
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

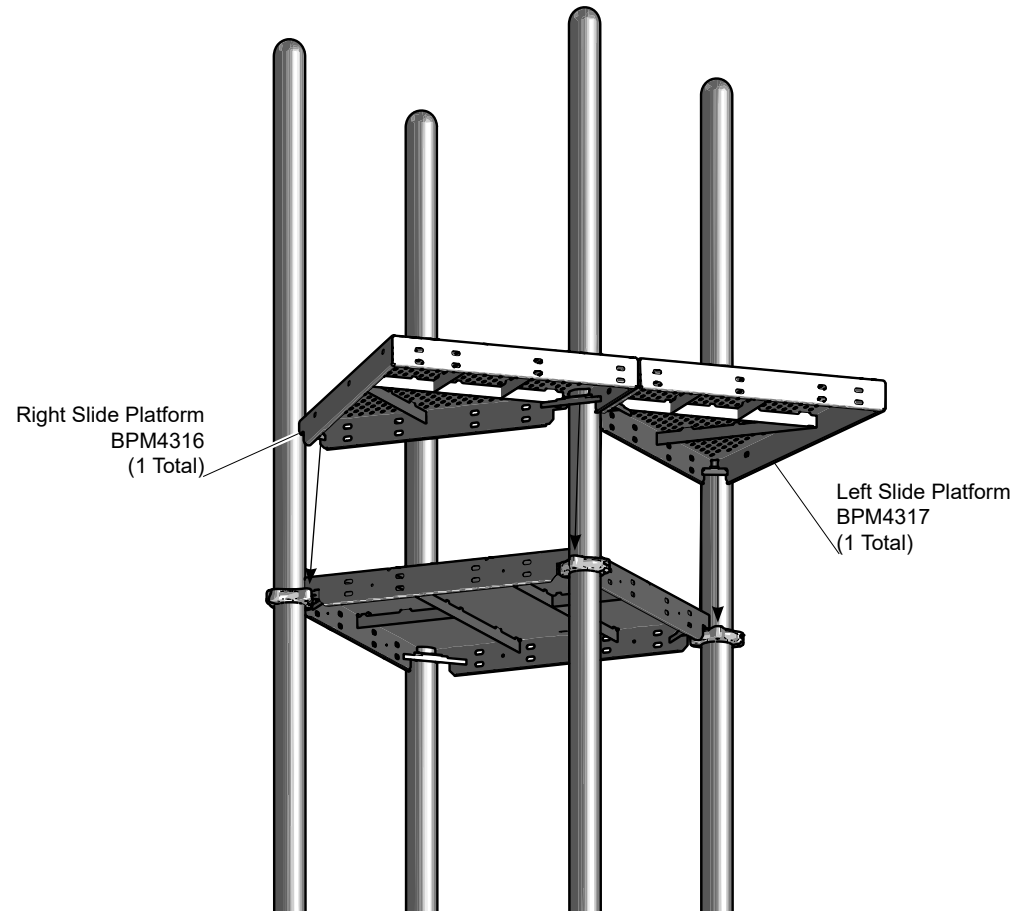
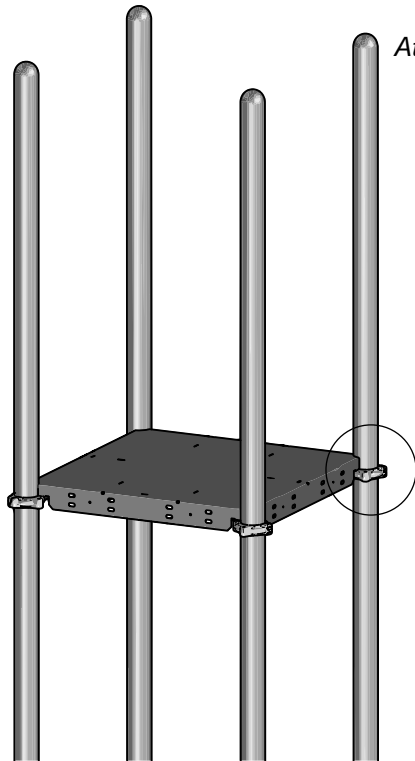
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 18.



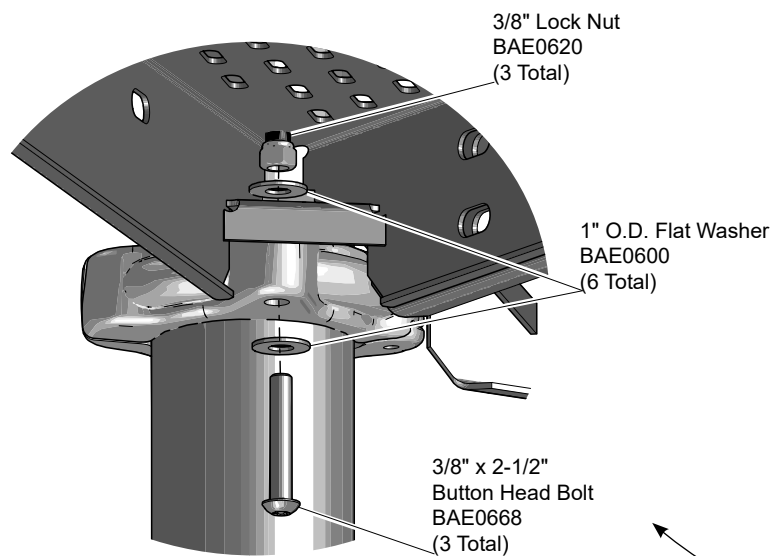
Detail A Step 4



Attach the deck clamps to the existing support posts.

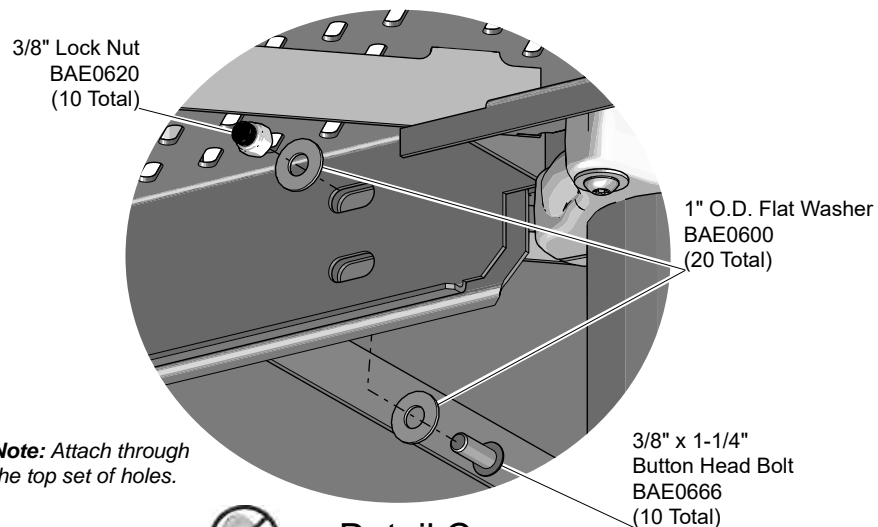


Installation Instructions



Detail B
Step 5

Attach the slide platforms to the deck clamps.

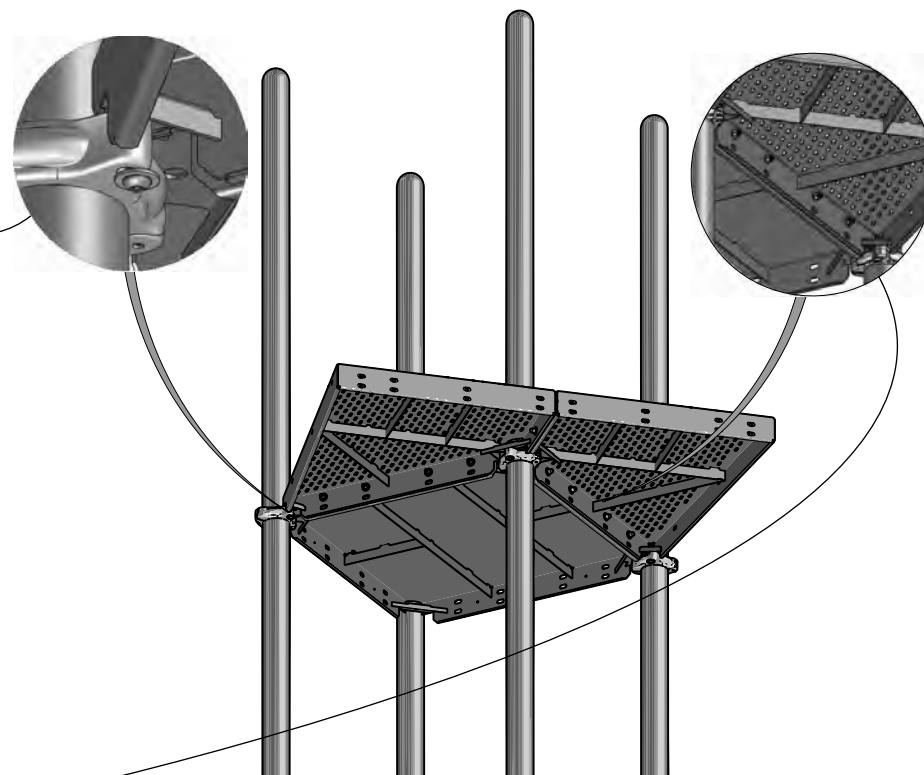


Note: Attach through the top set of holes.

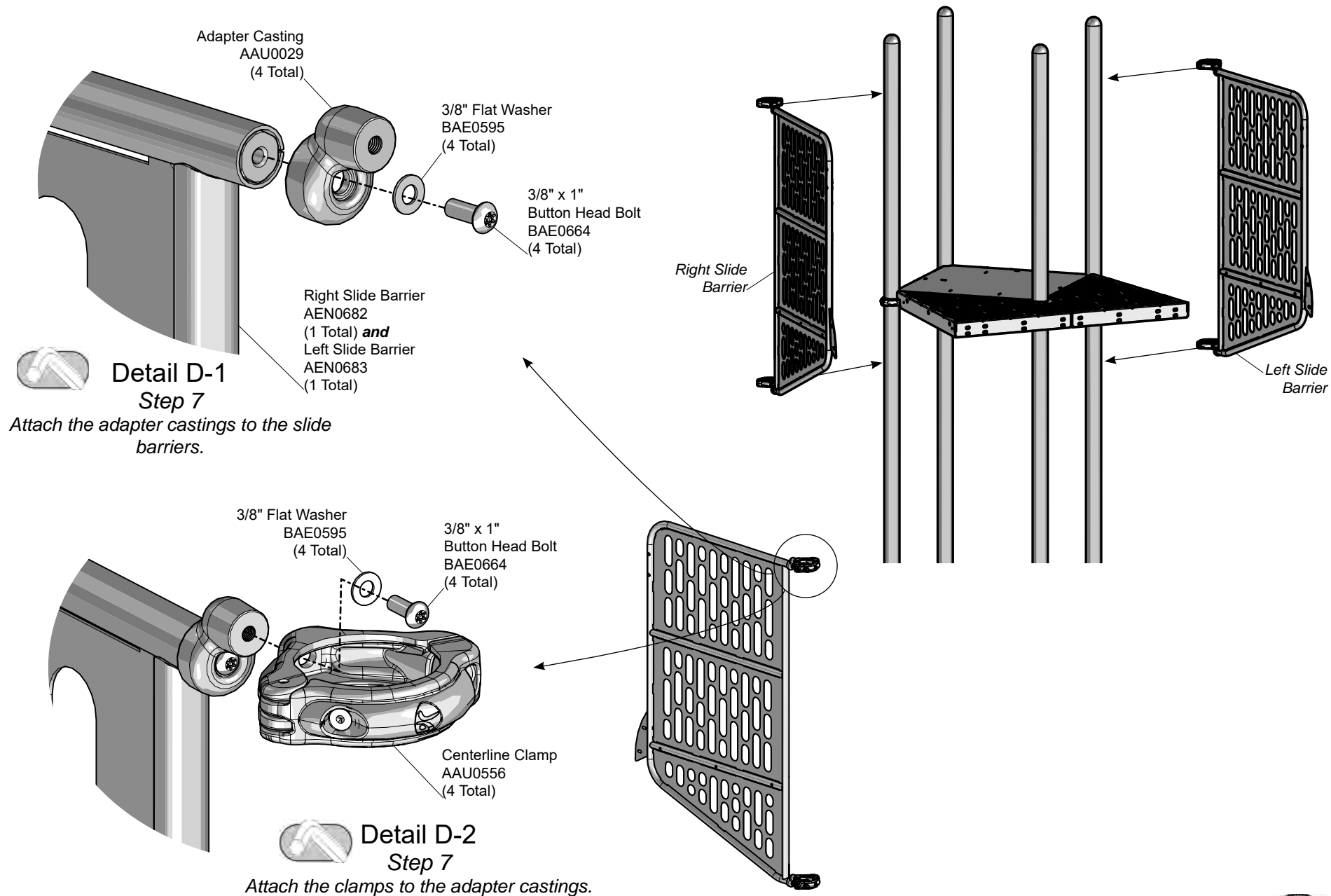


Detail C
Step 6

Attach the side platforms to the existing deck and to each other.

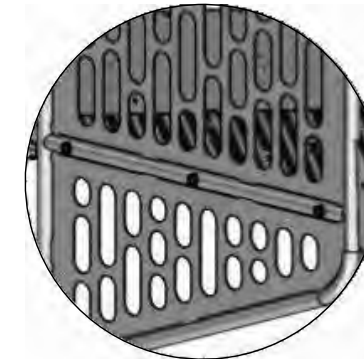
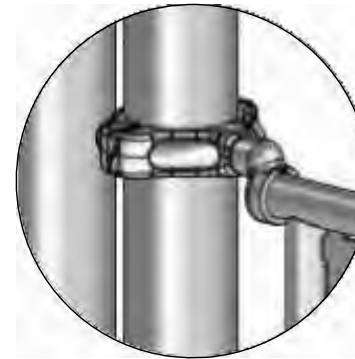
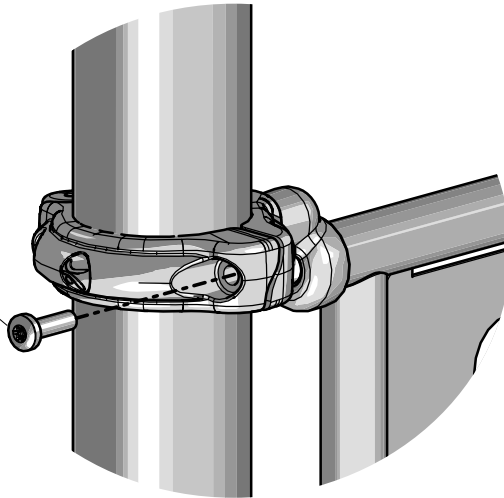



Installation Instructions



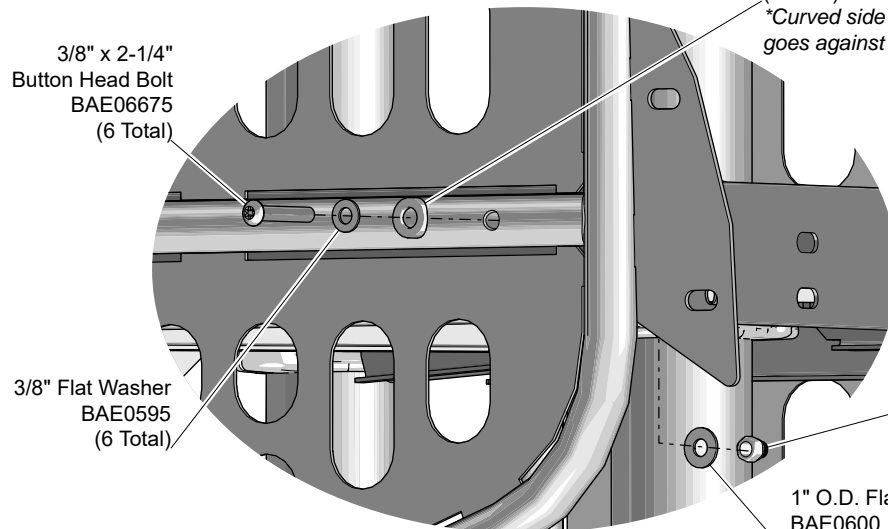
Installation Instructions

3/8" x 1-1/4"
Tamper Resistant Bolt
BAE0662
(4 Total)



 **Detail E-1**
Step 8
*Attach the slide barriers to the
support posts.*

3/8" x 2-1/4"
Button Head Bolt
BAE06675
(6 Total)



3/8" Flat Washer
BAE0595
(6 Total)

1" O.D. Nylon Washer
BAE0203
(6 Total)
**Curved side of washer
goes against the barrier.*

3/8" Lock Nut
BAE0620
(6 Total)

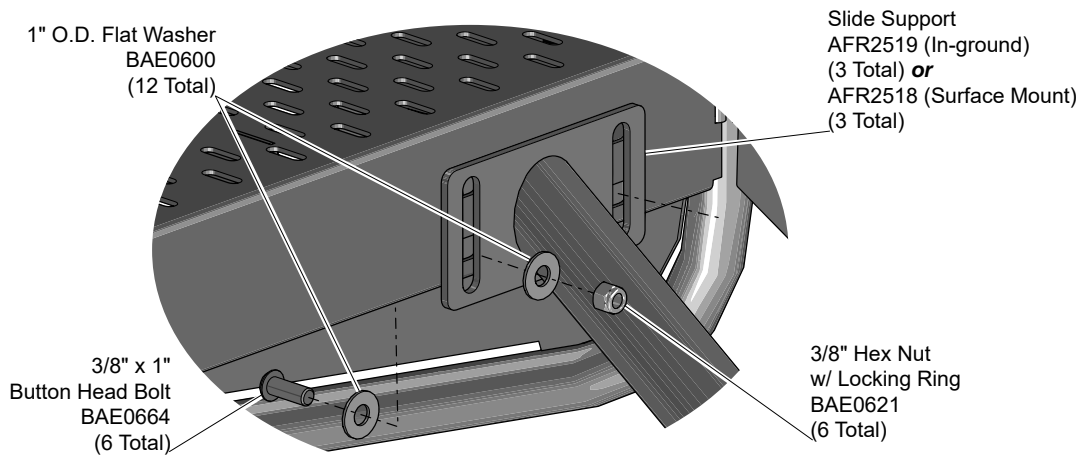
1" O.D. Flat Washer
BAE0600
(6 Total)



Detail E-2
Step 8

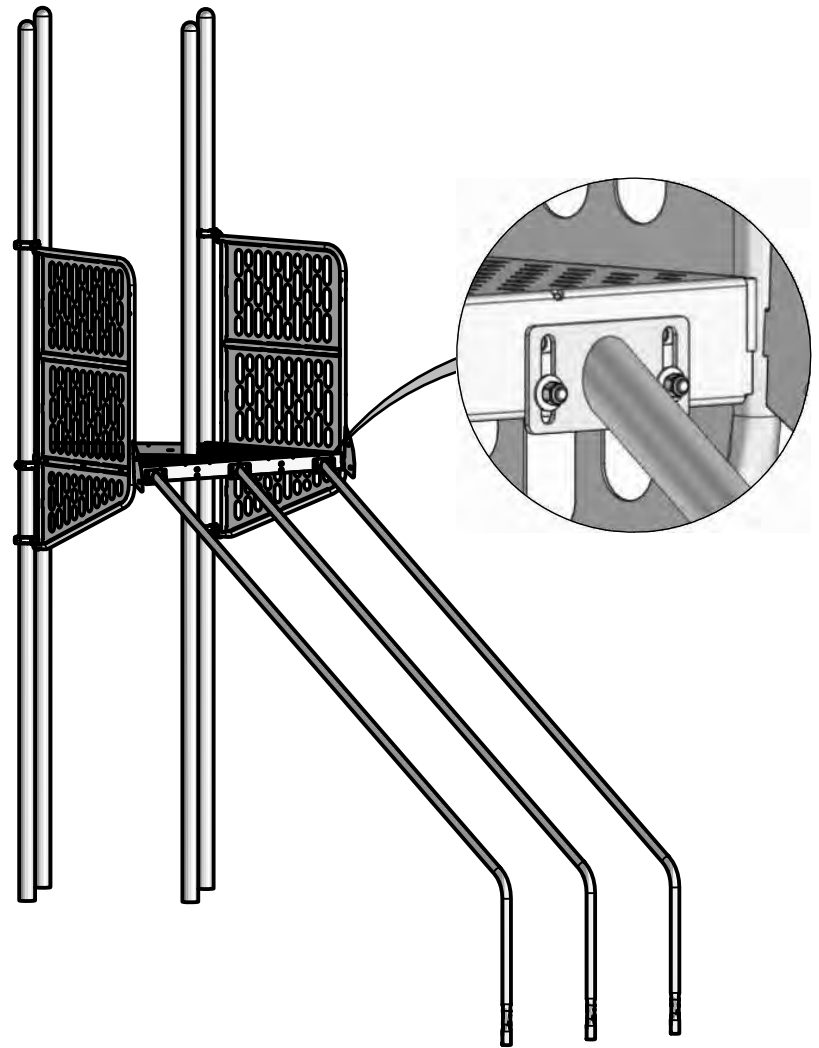
Attach the slide barriers to the slide platforms.

Installation Instructions

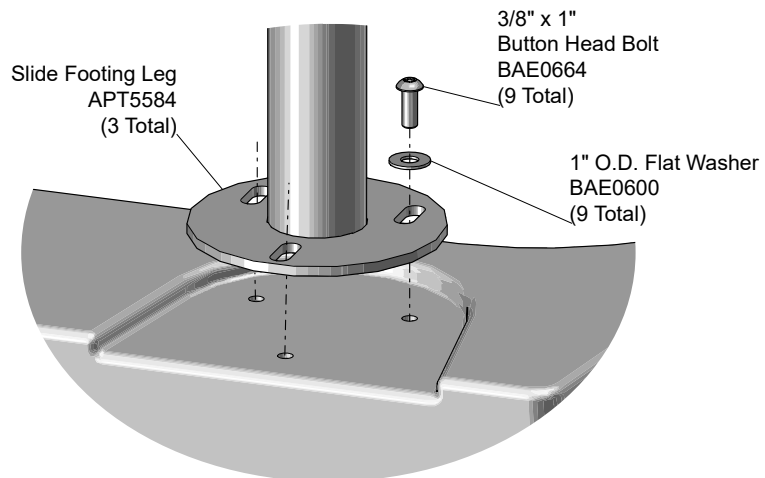


 **Detail F**
Step 9
Attach the slide supports to the platforms.

Important Note: Attach the slide supports to the platforms through the **bottom holes only**.



Installation Instructions

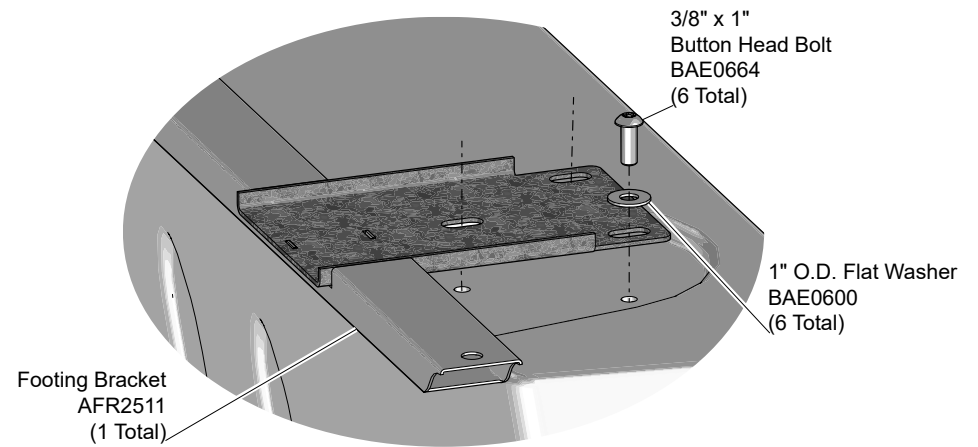
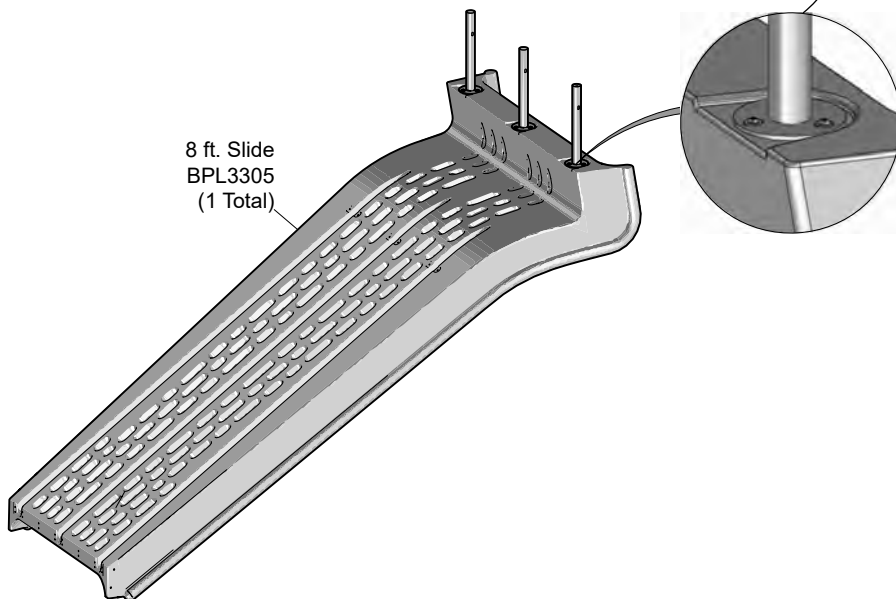


Detail G

Step 10

(In-Ground Mount Only)

Attach the footing legs to the 8 ft. slide.

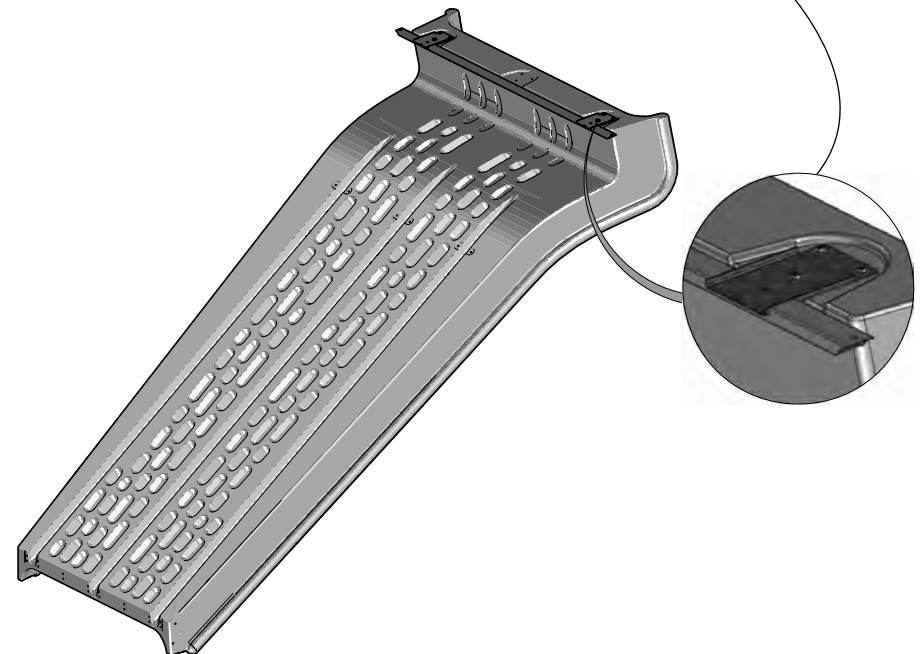


Detail H

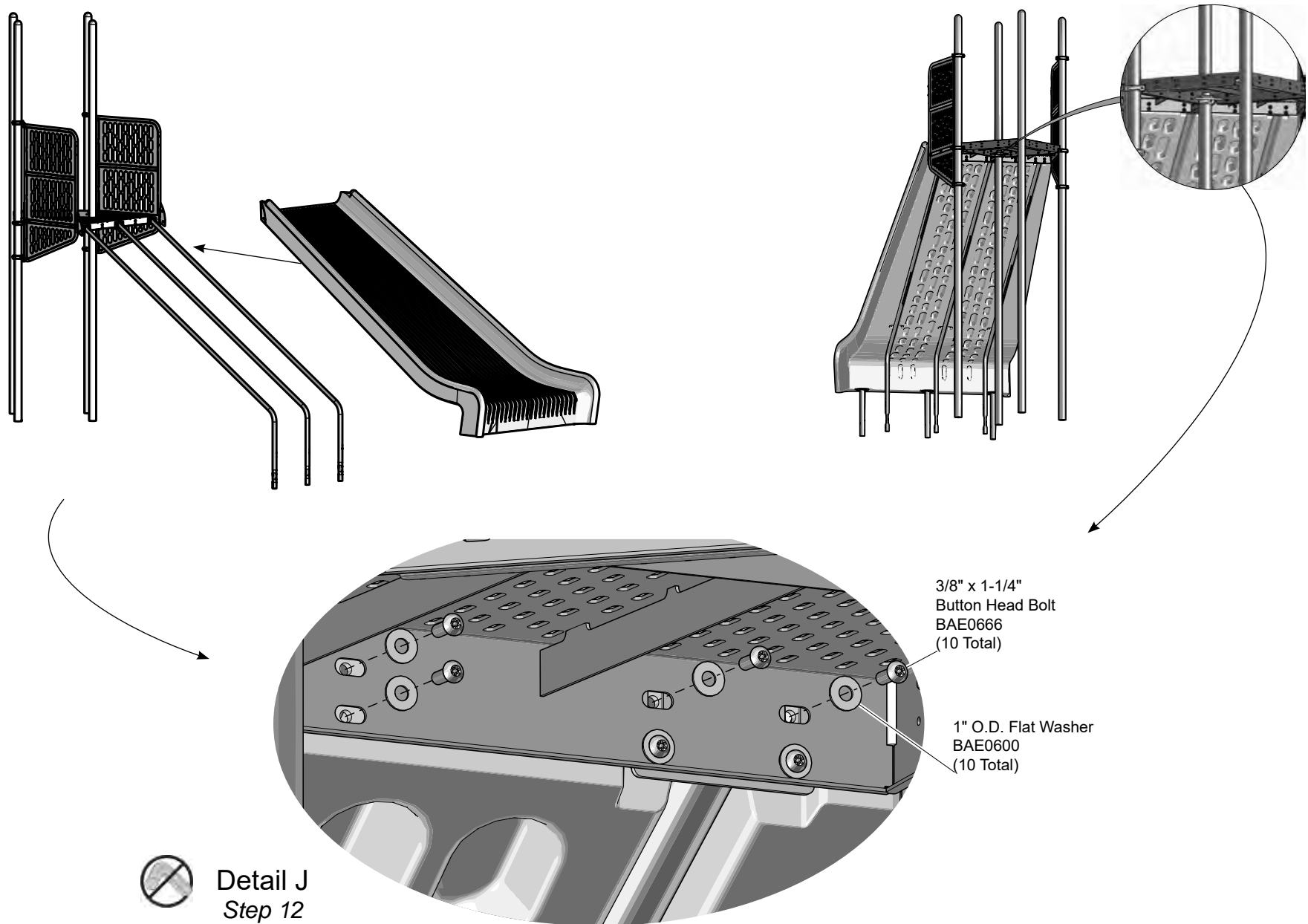
Step 11

(Surface Mount Only)

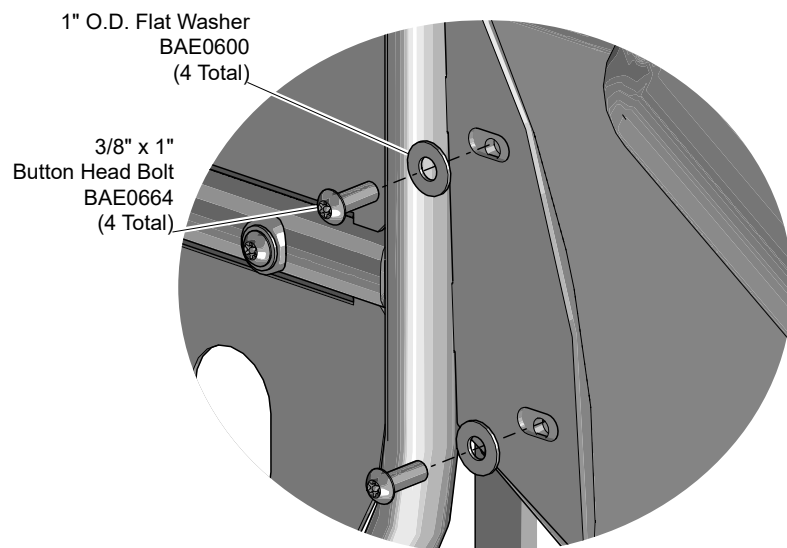
Attach the footing bracket to the 8 ft. slide.



Installation Instructions

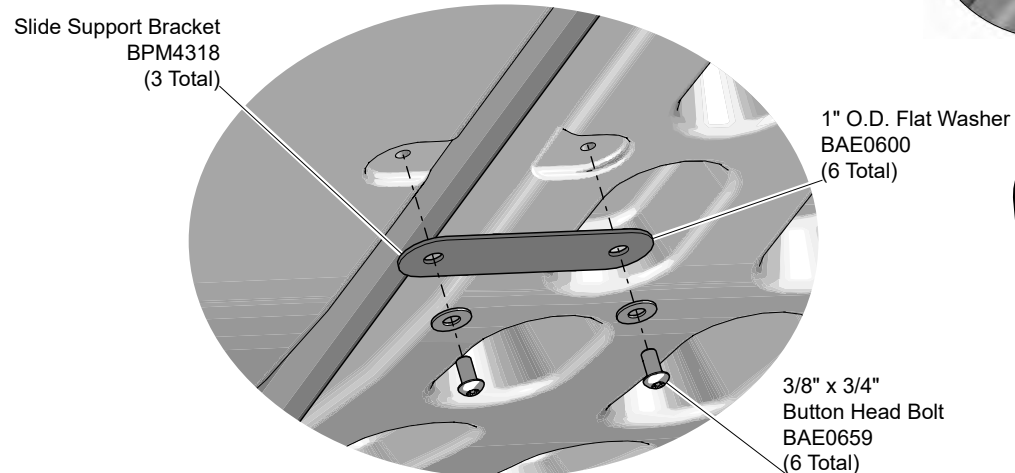


Installation Instructions



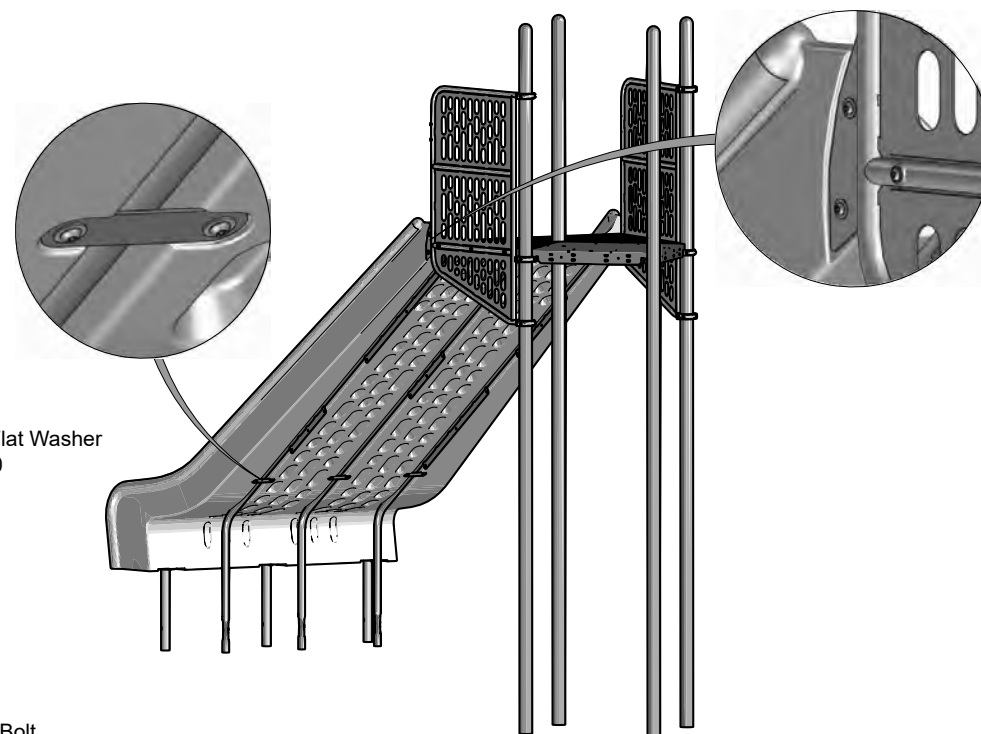
Detail K
Step 13

Attach the slide barriers to the slide.

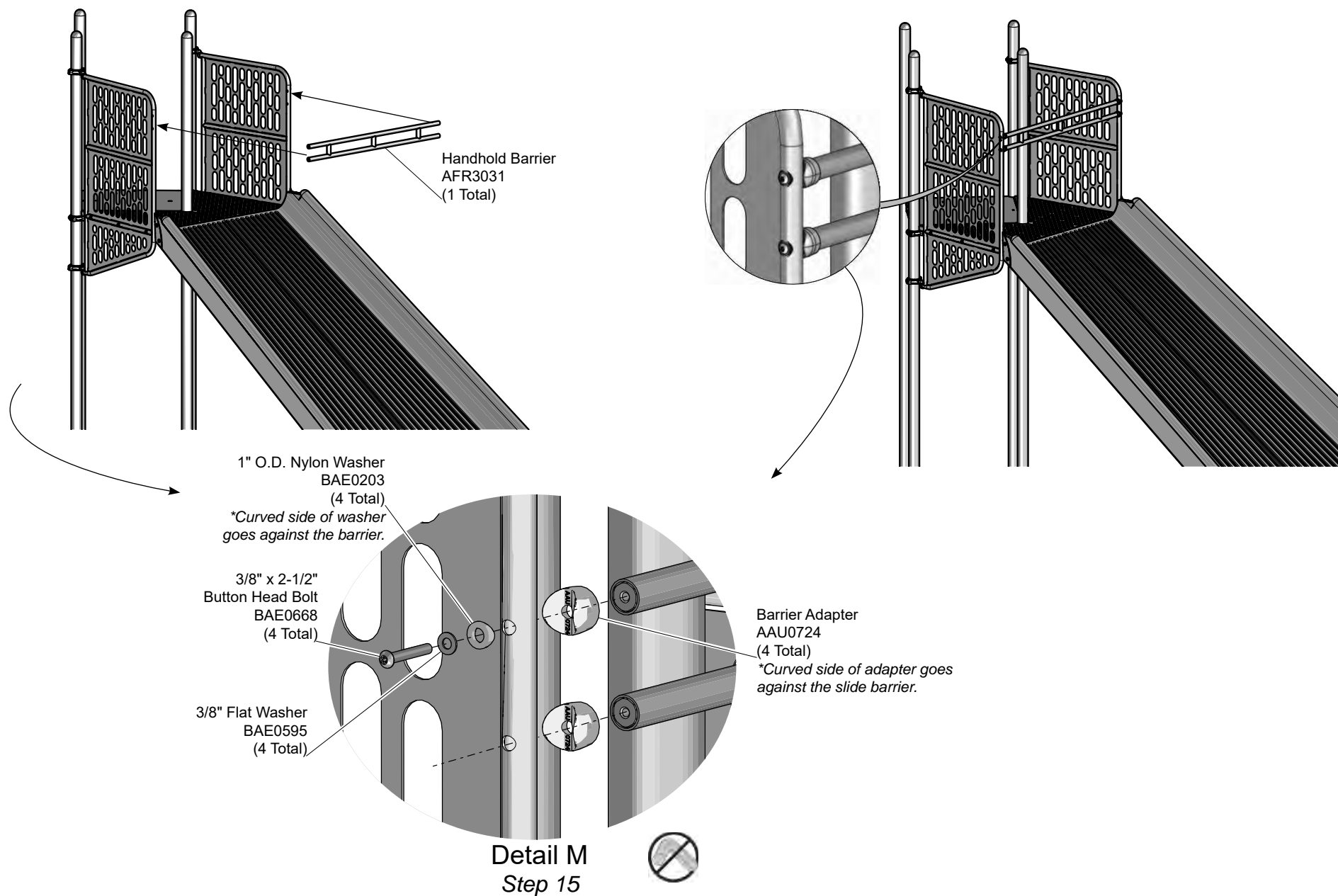


Detail L
Step 14

*Attach the slide support brackets
to the bottom of the slide.*

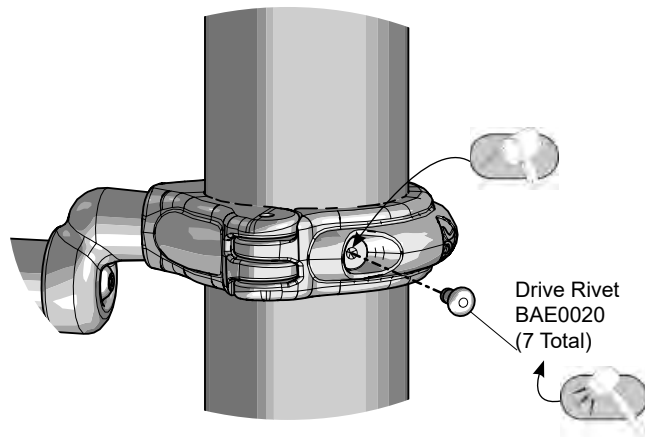


Installation Instructions



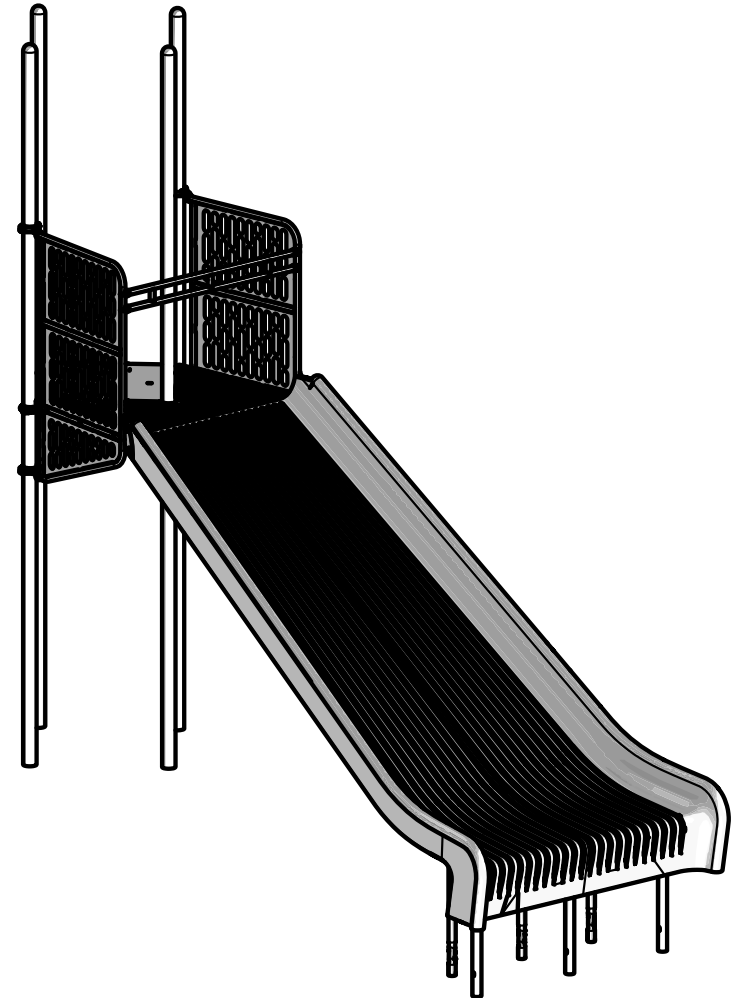
Attach the handhold barrier to the slide barriers.

Installation Instructions



Detail N
Step 17

Secure the centerline clamps and deck clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare footings as shown in the **Component or Surface Mount Footing Details** on pages 6 and 7 of this installation document.

Step 4: Attach the deck clamps to the existing support posts. See **Detail A**. Close the deck clamps around the support posts, and attach as shown.

Note: One deck clamp per support post, refer to the Master Layout Drawing for placement.

Step 5: Attach the slide platforms to the deck clamps. See **Detail B**. Lower the slide platforms onto the deck clamps, and attach as shown.

Step 6: Attach the slide platforms to the existing deck and to each other. See **Detail C**. Align the holes on the slide platforms with the existing deck, and attach through the top set of holes on the platforms as shown. Attach the slide platforms to each other as shown.

Step 7: Attach the clamps to the slide barriers. See **Details D-1 and D-2**. Place the adapter castings over the ends of the slide barriers, and attach as shown. Place the clamps over the ends of the slide barriers, and attach as shown.

Step 8: Attach the slide barriers to the support posts. See **Details E-1 and E-2**. Position the slide barriers against the sides of the slide platforms. Close the clamps around the support posts, and attach as shown.

Step 9: Attach the slide supports to the platforms. See **Detail F**. Place the bracket end of the slide supports against the platforms, align the holes, and attach as shown.

Important Note: Attach the slide supports to the platforms through the bottom holes only.

Step 10 (In-Ground Mount Only): Attach the footing legs to the 8 ft. slide. See **Detail G**. Position the footing legs on the bottom of the slide, and attach as shown.

Step 11 (Surface Mount Only): Attach the footing bracket to the 8 ft. slide. See **Detail H**. Position the footing bracket to the bottom of the slide, and attach as shown.

Step 12: Attach the slide to the platforms. See **Detail J**. With adequate manpower, position the slide on top of the slide supports and against the platforms, and attach as shown.

Step 13: Attach the slide barriers to the slide. See **Detail K**. With the holes aligned on the side of the slide and the barriers, attach as shown.

Step 14: Attach the slide support brackets to the bottom of the slide. See **Detail L**. Place the slide support bracket against the bottom of the slide, and attach as shown.

Step 15: Attach the handhold barrier to the slide barriers. See **Detail M**. Position the handhold barrier between the slide barriers, and attach as shown.

Final Details.

Step 15: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-ground Mount: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

Step 16: Install drive rivets. See **Detail M**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.



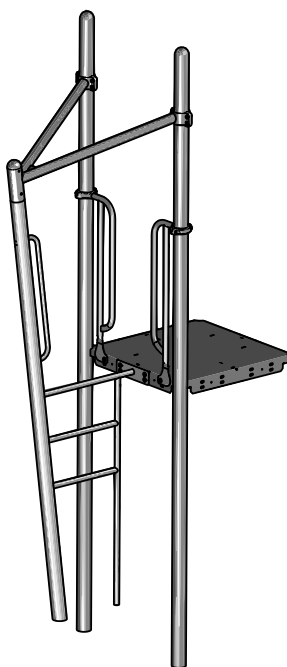
CH4696 - MIGHTY DESCENT

PART NO.	DESCRIPTION	QTY.
AAU0029	CENTERLINE ADAPTER CASTING	4
AAU0230	CLAMP - 3.50" DECK HANGER DIE CAST	3
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4
AAU0724	CASTING - 1.315" DIA ADAPTER	4
AEN0682	FRAME - 66.31" x 41.66" x 1.32" (RIGHT)	1
AEN0683	FRAME - 66.32" x 41.66" x 1.32" (LEFT)	1
AFR3031	FRAME - 58.13" x 5.57" x 1.32"	1
AFR2519	FRAME - 122.03" x 119.07" x 5.75"	3
APT5584	POST - SLIDE FOOTING	3
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	7
BAE0203	WASHER - NYLON COVERED .53" I.D. x 1.00" O.D.	10
BAE0595	WASHER - 3/8" SAE FLAT	18
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	73
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	19
BAE0621	NUT - 3/8"-16 ZINC HEX w/LOCKING RING	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	7
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	33
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	20
BAE0668	BOLT - 3/8"-16 x 2.50" BUTTON HEAD - SS	7
BAE06675	BOLT - 3/8"-16 x 2.25" BUTTON HEAD - SS	6
BPL3305	SLIDE - 8' DISTINCTIVE	1
BPM4316	PLATFORM - DISTINCTIVE SLIDE (CH) (RIGHT)	1
BPM4317	PLATFORM - DISTINCTIVE SLIDE (CH) (LEFT)	1
BPM4318	SHEET METAL - 6.75" x 1.75" x 12GA	3

CH4696S - MIGHTY DESCENT SURFACE MOUNT

PART NO.	DESCRIPTION	QTY.
AAU0029	CENTERLINE ADAPTER CASTING	4
AAU0230	CLAMP - 3.50" DECK HANGER DIE CAST	3
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4
AAU0724	CASTING - 1.315" DIA ADAPTER	4
AEN0682	FRAME - 66.31" x 41.66" x 1.32" (RIGHT)	1
AEN0683	FRAME - 66.32" x 41.66" x 1.32" (LEFT)	1
AFR3031	FRAME - 58.13" x 5.57" x 1.32"	1
AFR2511	FRAME - 84.00" x 8.75" x 1.00"	1
AFR2518	FRAME - 125.08" x 97.07" x 8.00"	3
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	7
BAE0203	WASHER - NYLON COVERED .53" I.D. x 1.00" O.D.	10
BAE0595	WASHER - 3/8" SAE FLAT	18
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	70
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	19
BAE0621	NUT - 3/8"-16 ZINC HEX w/LOCKING RING	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	7
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	30
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	20
BAE0668	BOLT - 3/8"-16 x 2.50" BUTTON HEAD - SS	7
BAE06675	BOLT - 3/8"-16 x 2.25" BUTTON HEAD - SS	6
BPL3305	SLIDE - 8' DISTINCTIVE	1
BPM4316	PLATFORM - DISTINCTIVE SLIDE (CH) (RIGHT)	1
BPM4317	PLATFORM - DISTINCTIVE SLIDE (CH) (LEFT)	1
BPM4318	SHEET METAL - 6.75" x 1.75" x 12GA	3





Assembly View (representative model)

ZZ Climber Part Number	Deck Height
ZZCH4701	36"
ZZCH4702	48"
ZZCH4703	60"
ZZCH4704	72"
ZZCH4705	84"
ZZCH4706	96"

Installation Instructions

Challengers® Models CH4701, CH4702, CH4703, CH4704, CH4705 and CH4706


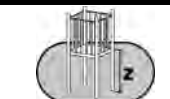





Verticlimber

36 in. - 96 in. (914 mm - 2438 mm) Deck Height

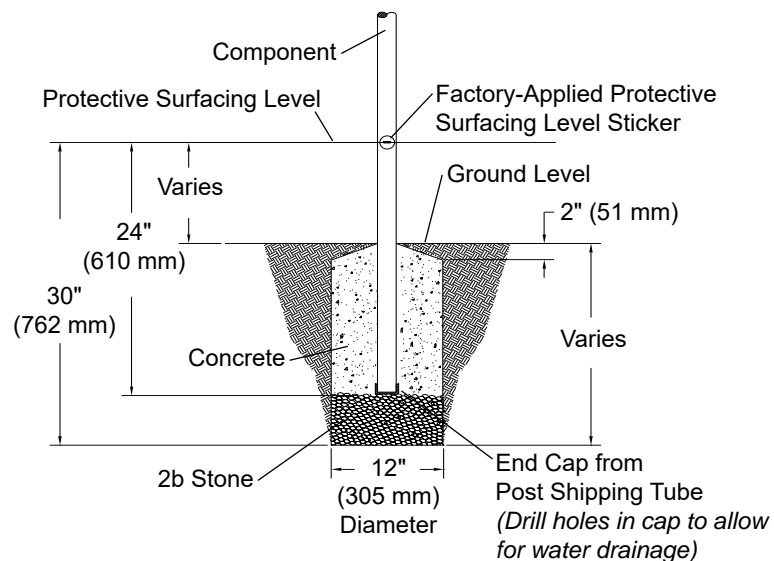
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time (In-Ground): 1.5 man-hours
 Concrete Required: 0.13 cubic yard (0,10 cubic meters)
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years):
 (36"-72" Decks): ASTM: 2-12, CSA: 1.5-12, EN: 2-14
 (84"-96" Decks): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions



Component Footing Detail (ASTM/CSA)

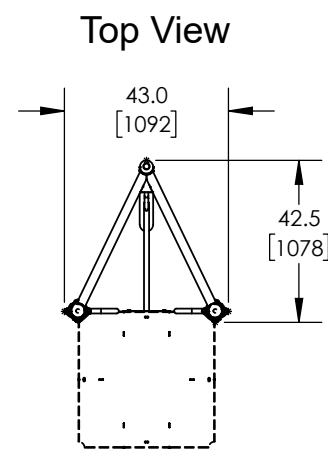
FOOTING NOTES

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

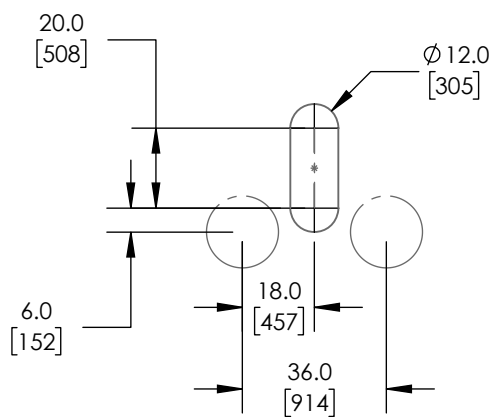
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

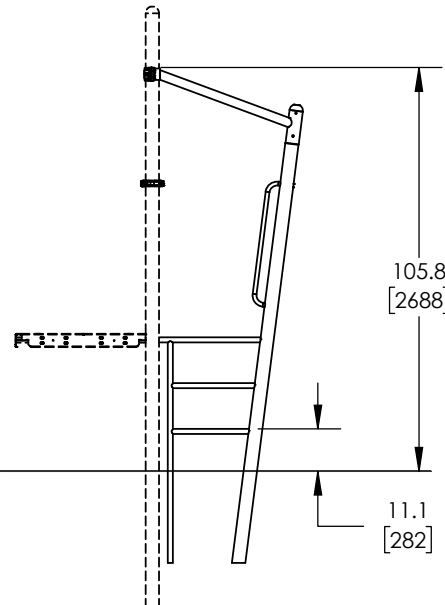
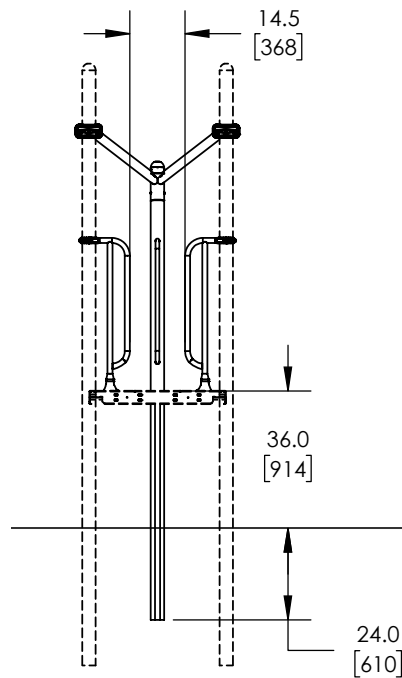
Installation Instructions



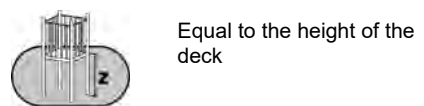
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram
(All Models)

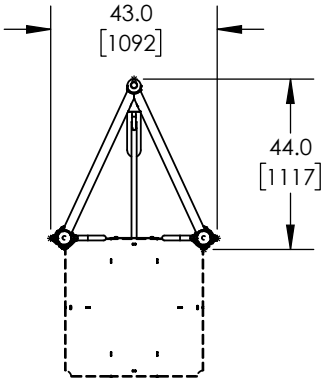


Elevation Views
CH4701

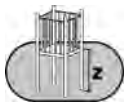


Installation Instructions

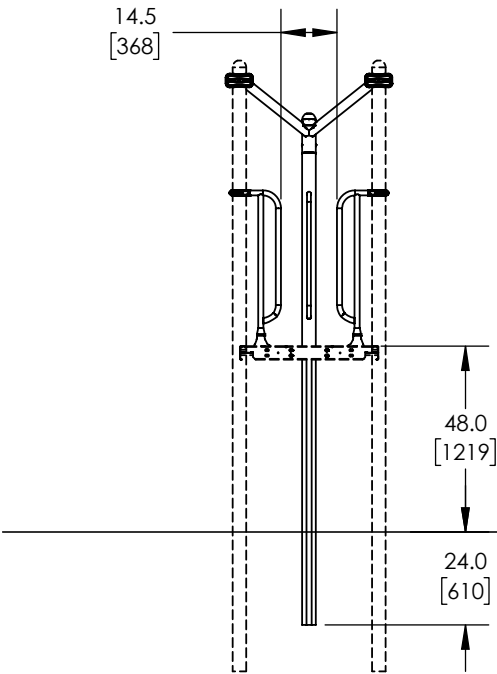
Top View



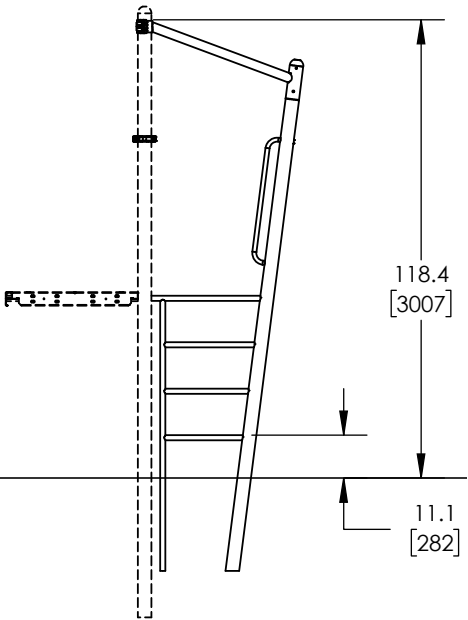
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Equal to the height of the deck



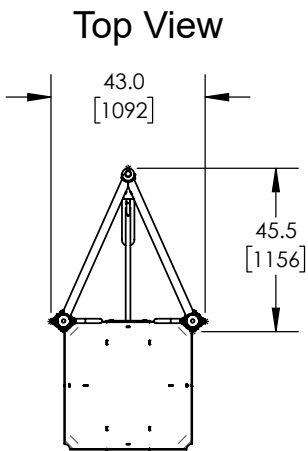
SURFACING LEVEL



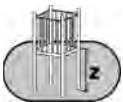
Elevation Views
CH4702



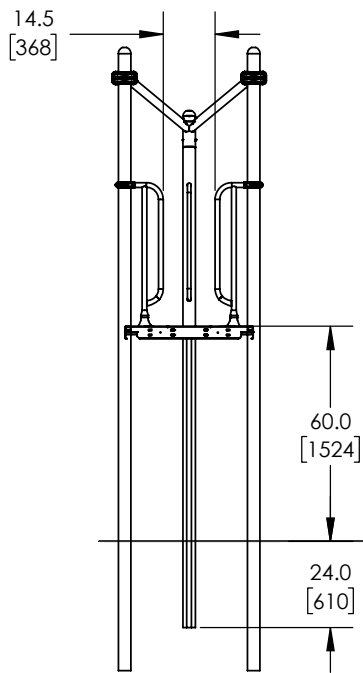
Installation Instructions



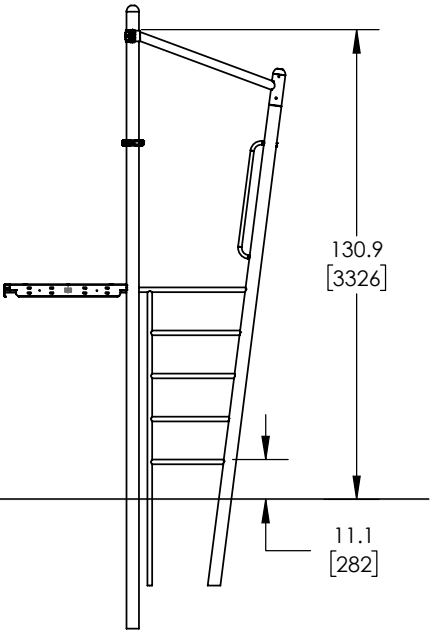
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Equal to the height of the deck



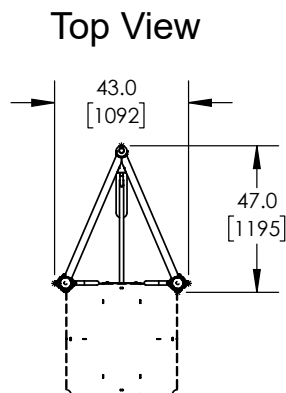
SURFACING LEVEL



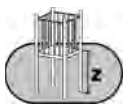
Elevation Views
CH4703



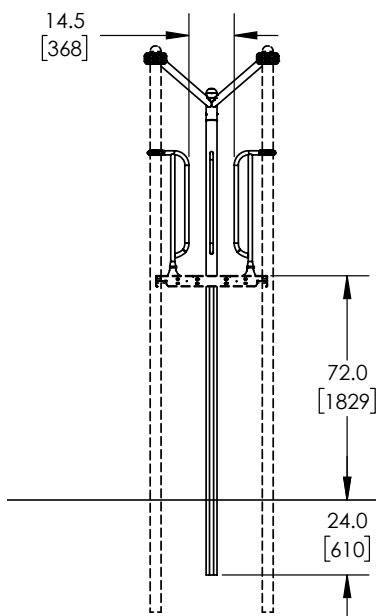
Installation Instructions



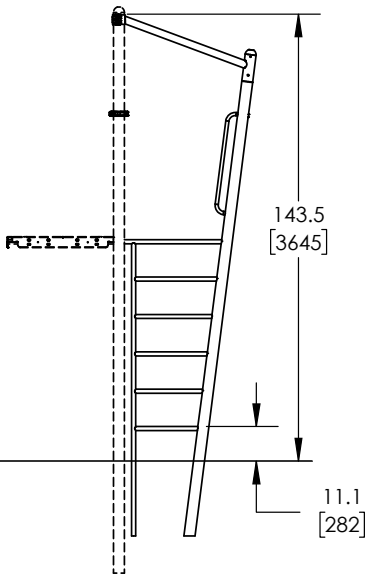
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Equal to the height of the deck



SURFACING LEVEL

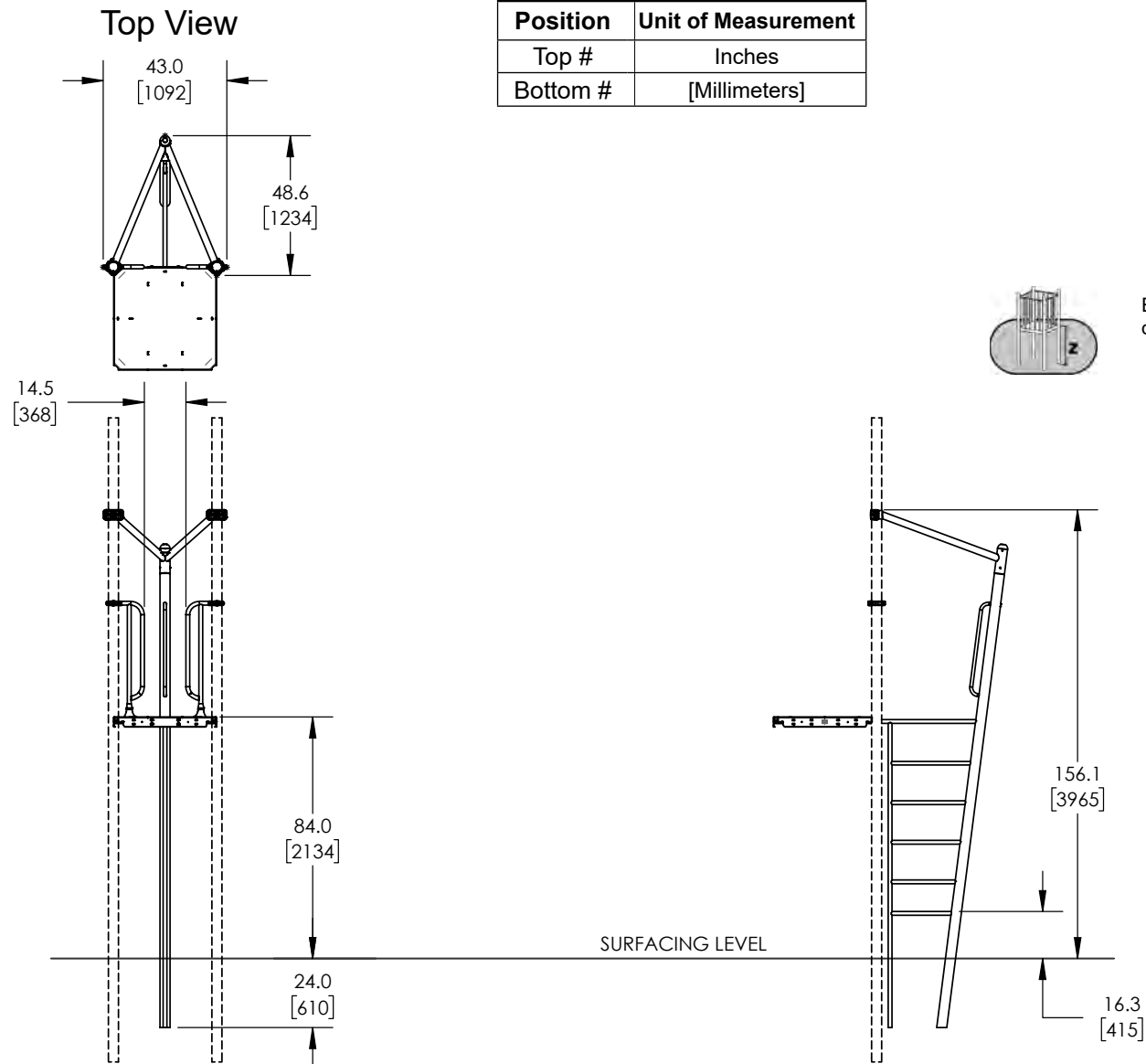


Elevation Views
CH4704



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

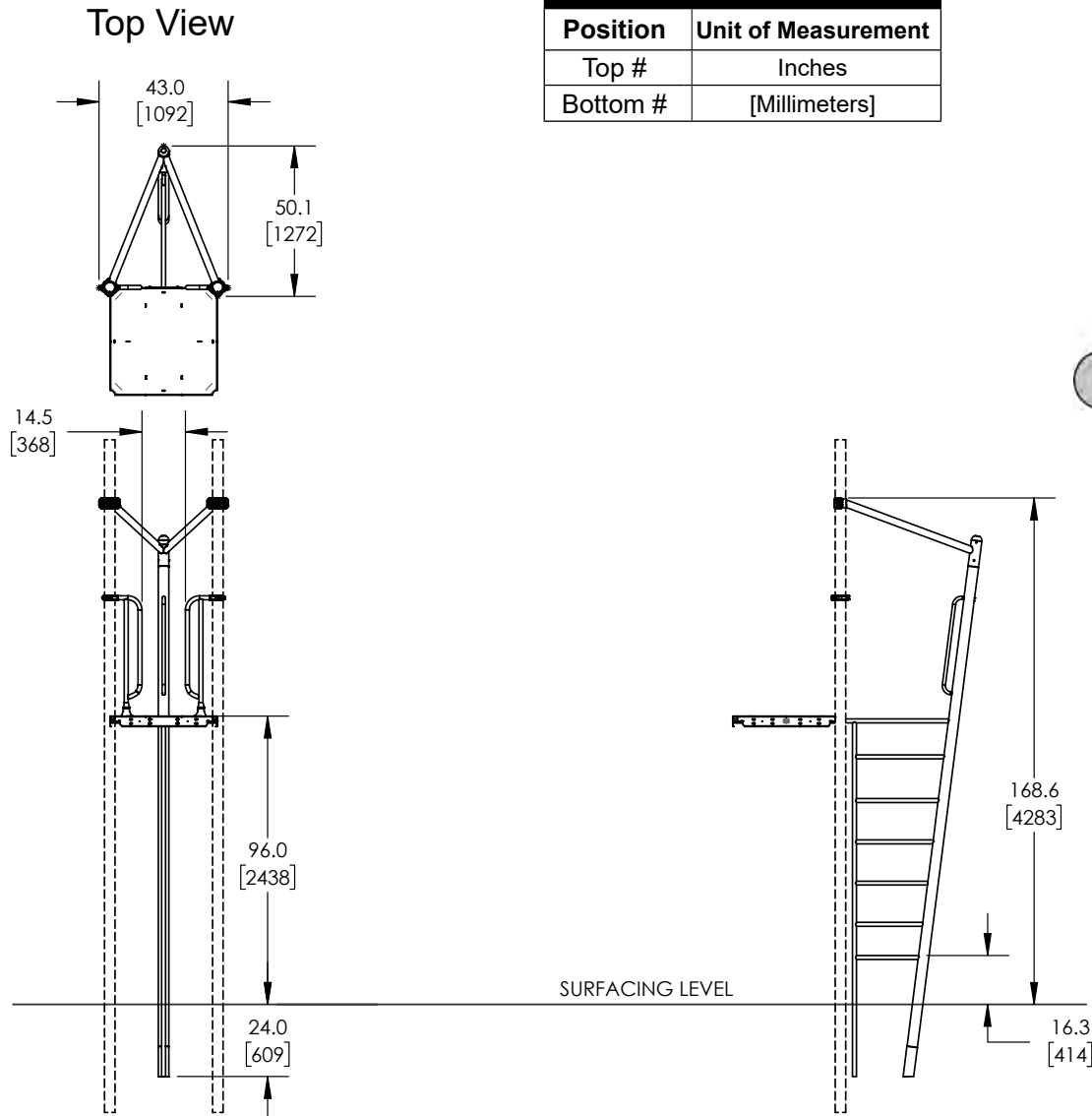


Elevation Views
CH4705



Installation Instructions

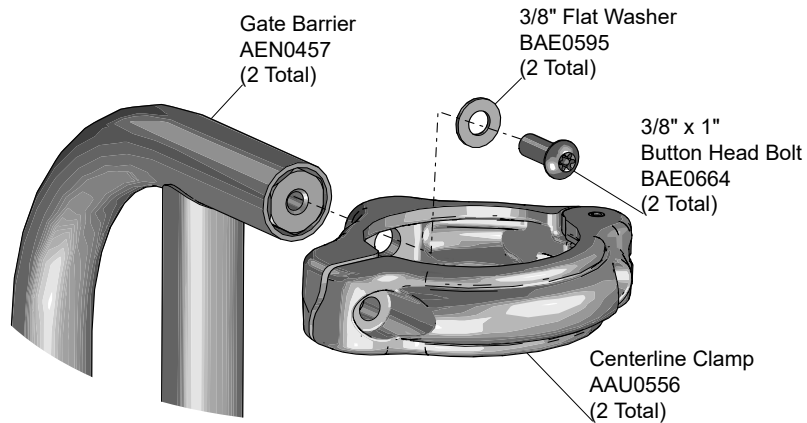
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Elevation Views
CH4706

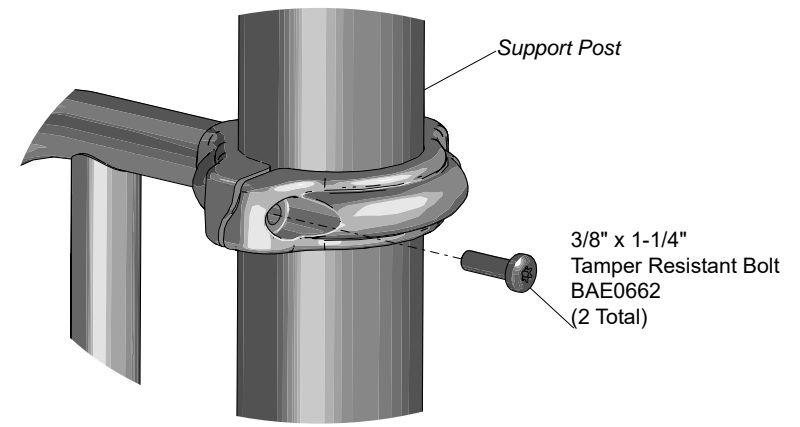
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 13.



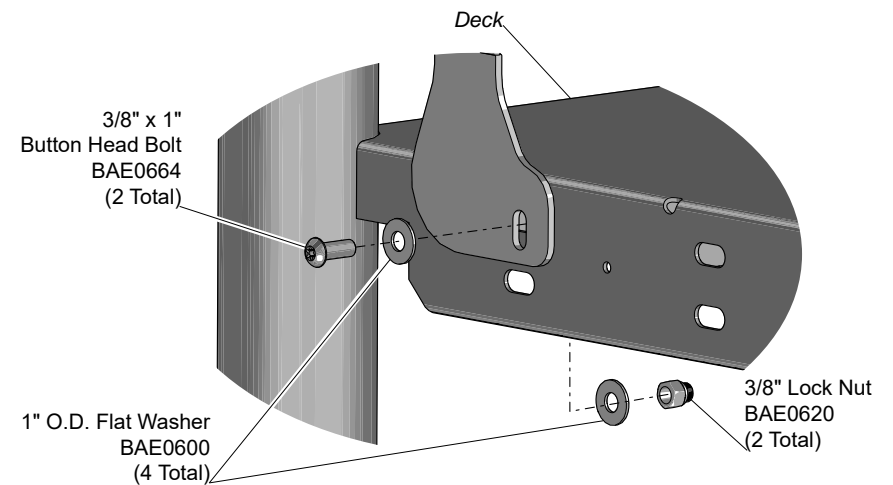
Detail A
Step 4

Attach the clamps to the gate barriers.



Detail B-1
Step 5

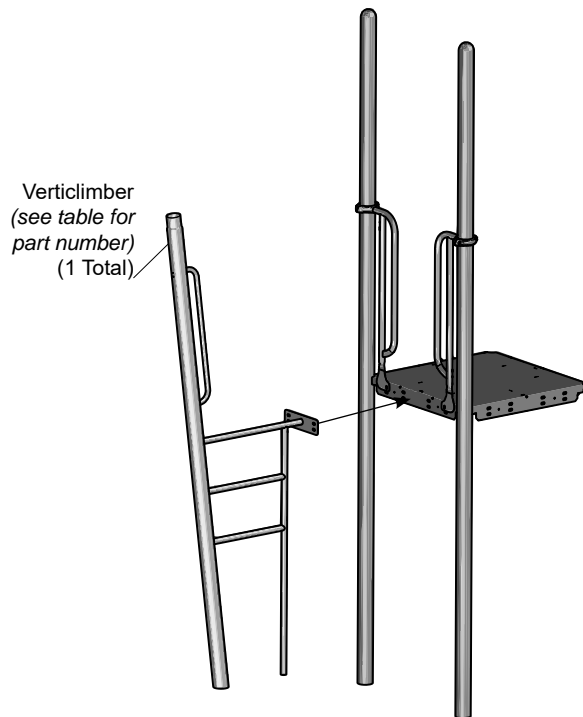
Attach the gate barriers to the support posts.



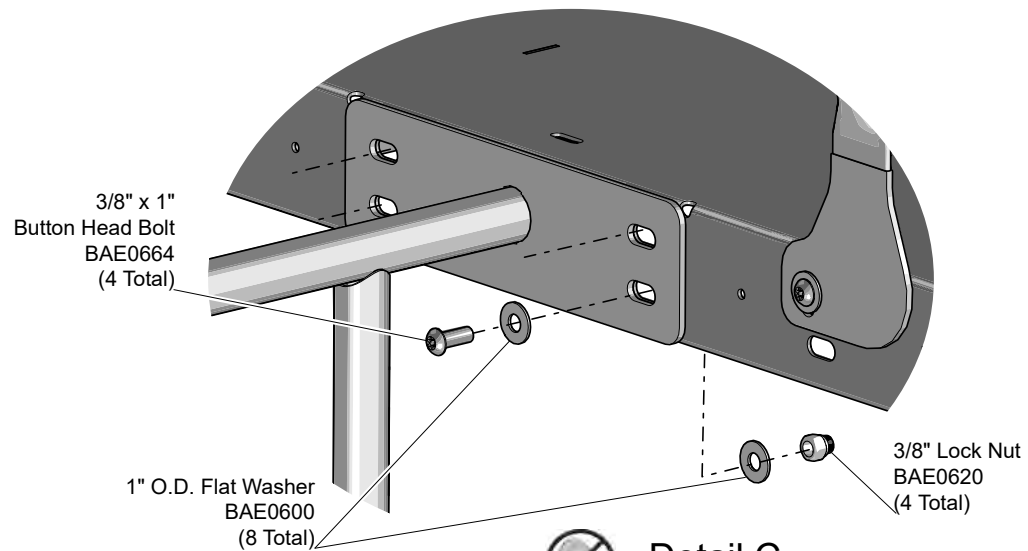
Detail B-2
Step 5

Attach the gate barriers to the existing deck.

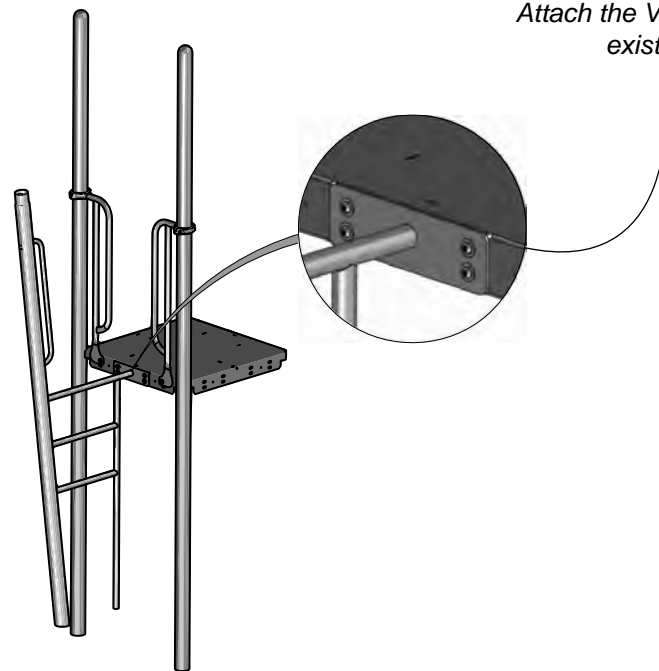
Installation Instructions



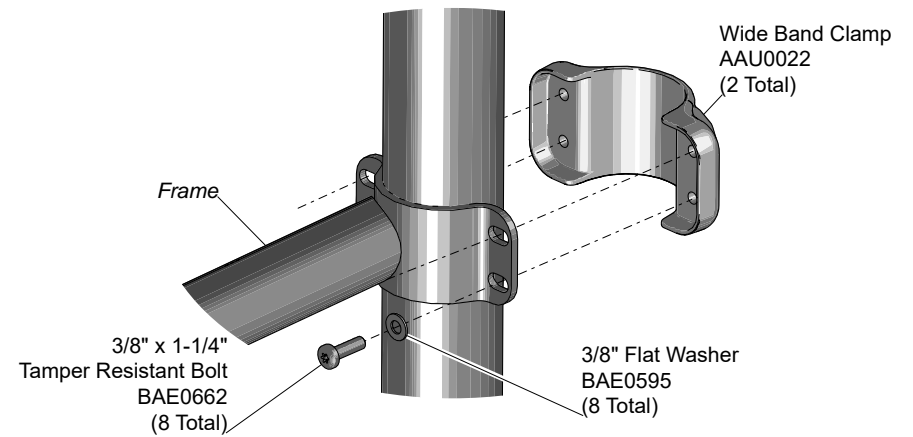
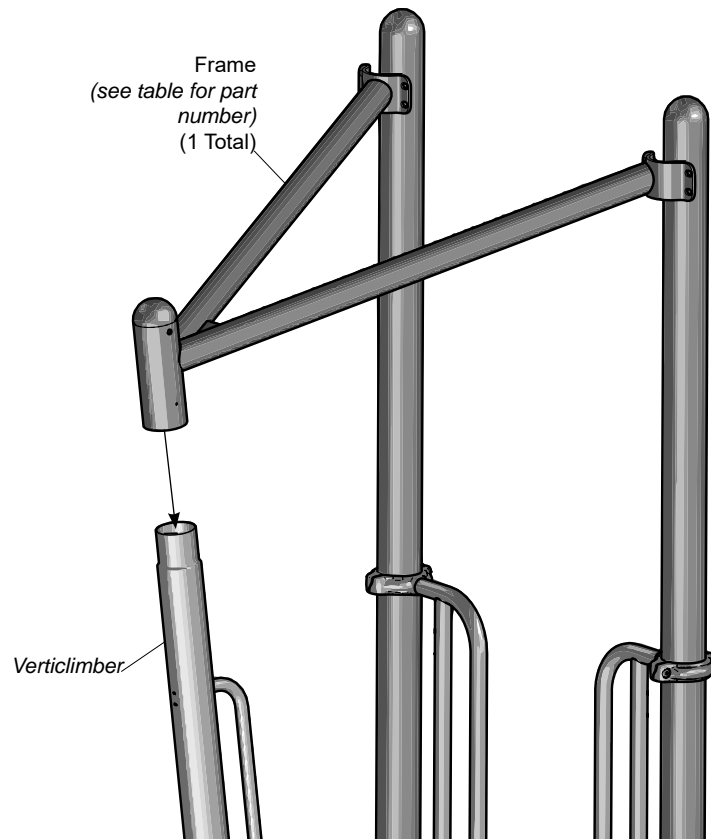
ZZ Part Number	Climber Part Number	Deck Height
ZZCH4701	AFR2480	36"
ZZCH4702	AFR2481	48"
ZZCH4703	AFR2482	60"
ZZCH4704	AFR2483	72"
ZZCH4705	AFR2484	84"
ZZCH4706	AFR2485	96"



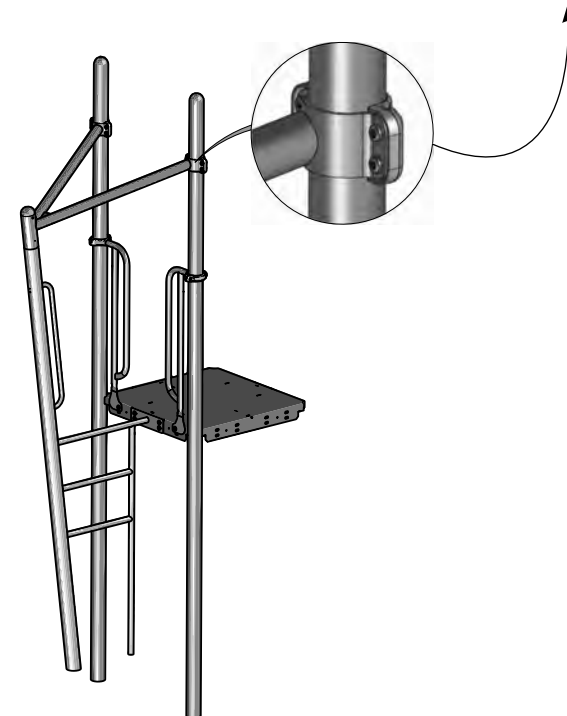
Detail C
Step 6
 Attach the Verticlimber to the existing deck.



Installation Instructions

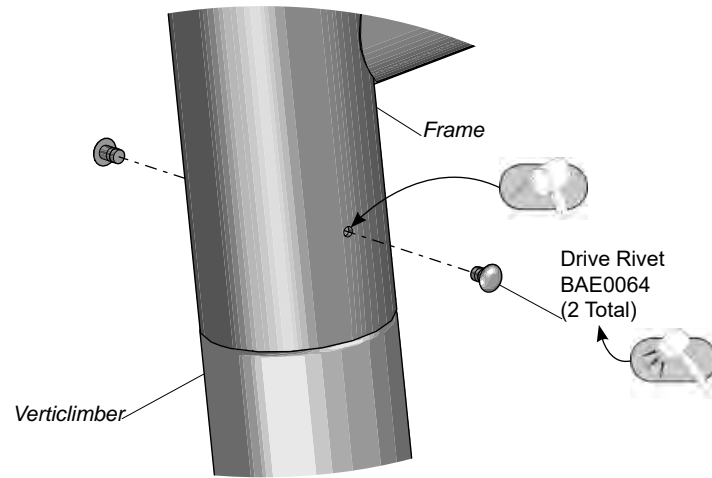


Detail D
Step 7
Attach the frame to the support posts.



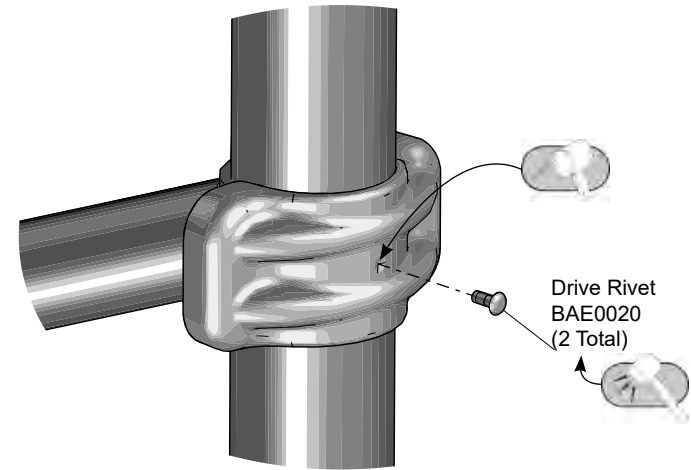
ZZ Part Number	Frame Part Number
ZZCH4701	AFR2458
ZZCH4702	AFR2459
ZZCH4703	AFR2460
ZZCH4704	AFR2461
ZZCH4705	AFR2462
ZZCH4706	AFR2463

Installation Instructions



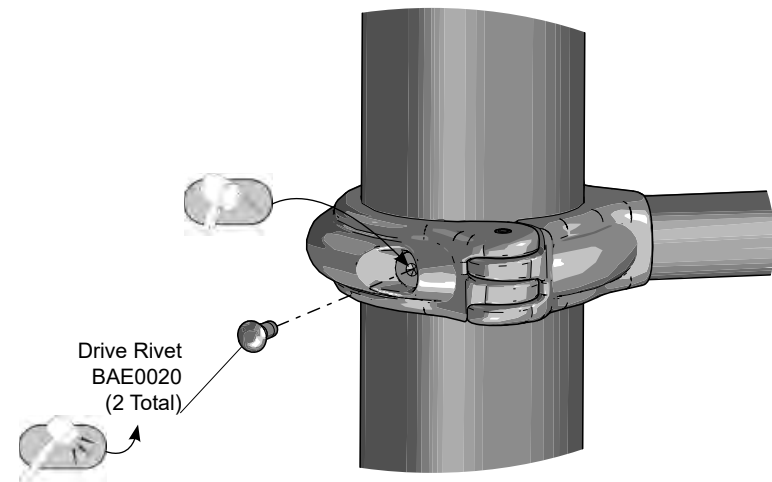
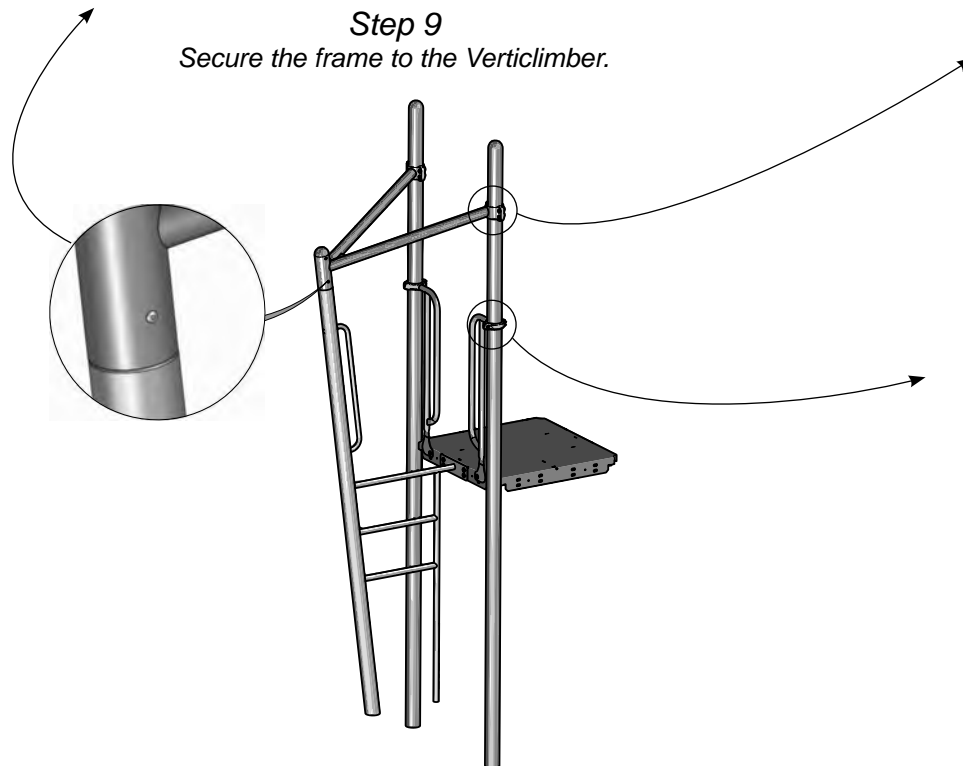
Detail E
Step 9

Secure the frame to the Verticlimber.



Detail F-1
Step 10

Secure the wide clamps to the support posts.



Detail F-2
Step 10

Secure the centerline clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Component Footing Details** on page 2 of this installation document.

Step 4: Attach the clamps to the gate barriers. See **Detail A**. Place the clamps on the ends of the gate barriers, and attach as shown.

Step 5: Attach the gate barriers to the support posts and existing deck. See **Details B-1 and B-2**. Position the gate barriers between the support posts, place the clamps around the support posts and attach as shown. Align the holes on the gate barriers with the top set of holes on the deck, and attach as shown.

Note: The gate barriers can attach through the bottom set of holes on the deck if there is a clamp conflict with another component.

Step 6: Attach the Verticlimber to the existing deck. See **Detail C**. Place the Verticlimber in the excavated footing hole and align the holes on the climber with the holes on the side of the deck, and attach as shown. The plate on the climber should be flush with the top of the deck.

Step 7: Attach the frame to the support posts. See **Detail D**. Lower the frame onto the top of the Verticlimber, and attach to the support posts as shown.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten **all** fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 9: Secure the frame to the Verticlimber. See **Detail E**. After the equipment assembly is complete, install a drive rivet in each side of the frame to permanently secure it to the climber. Using a 1/4" drill bit, drill through the holes on the frame and into the climber. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the frame. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 10: Install drive rivets. See **Details F-1 and F-2**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.



CH4701 - VERTICLIMBER 36 in. (914 mm)

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2458	FRAME - 42.31" x 40.75" x 19.90"	1
AFR2480	FRAME - 112.94" x 38.70" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8

CH4702 - VERTICLIMBER 48 in. (1219 mm)

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2459	FRAME - 42.21" x 42.31" x 20.46"	1
AFR2481	FRAME - 124.95" x 40.23" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8

CH4703 - VERTICLIMBER 60 in. (1524 mm)

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2460	FRAME - 43.70" x 42.31" x 21.03"	1
AFR2482	FRAME - 136.94" x 41.76" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8

CH4704 - VERTICLIMBER 72 in. (1829 mm)

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2461	FRAME - 45.18" x 42.31" x 21.59"	1
AFR2483	FRAME - 148.94" x 43.29" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8



CH4705 - VERTICLIMBER 84 in. (2134 mm)

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2462	FRAME - 46.69" x 42.31" x 22.16"	1
AFR2484	FRAME - 160.94" x 44.82" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8

CH4706 - VERTICLIMBER 96 in. (2438 mm)

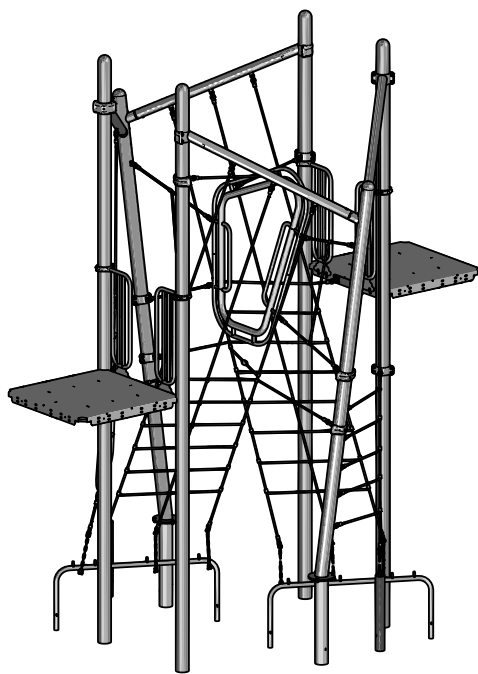
PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	2
AEN0457	BARRIER - 42.07" x 8.00" GATE	2
AFR2463	FRAME - 48.19" x 42.31" x 22.73"	1
AFR2485	FRAME - 172.91" x 46.33" x 12.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0064	RIVET - 1/4" x 13/32" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	10
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH4707 and CH4707S




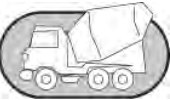



Converge

In-ground and Surface Mount

Installation Preparation

Recommended Crew: Three (3) adults
 Installation Time (In-Ground): 9 man-hours
 Installation Time (Surface Mount): 6 man-hours
 Concrete Required: 0.38 cubic yard (0,28 cubic meters)
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

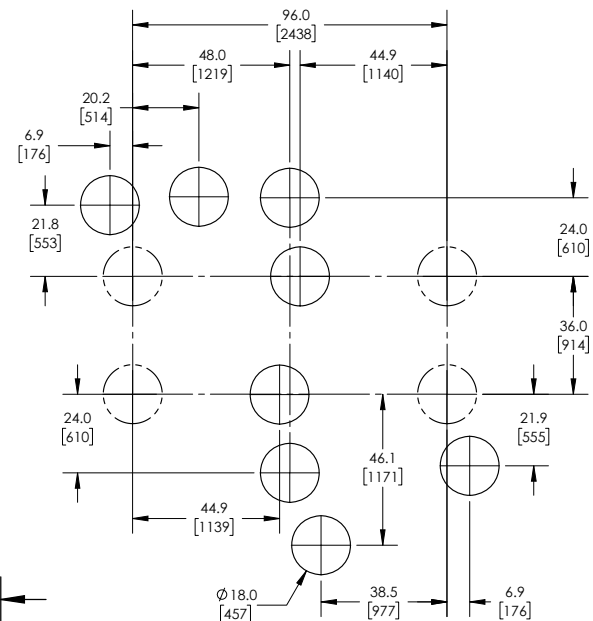
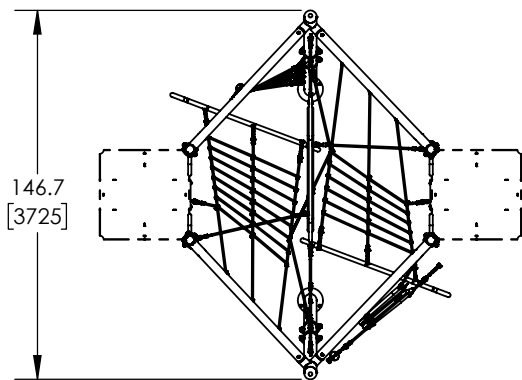
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

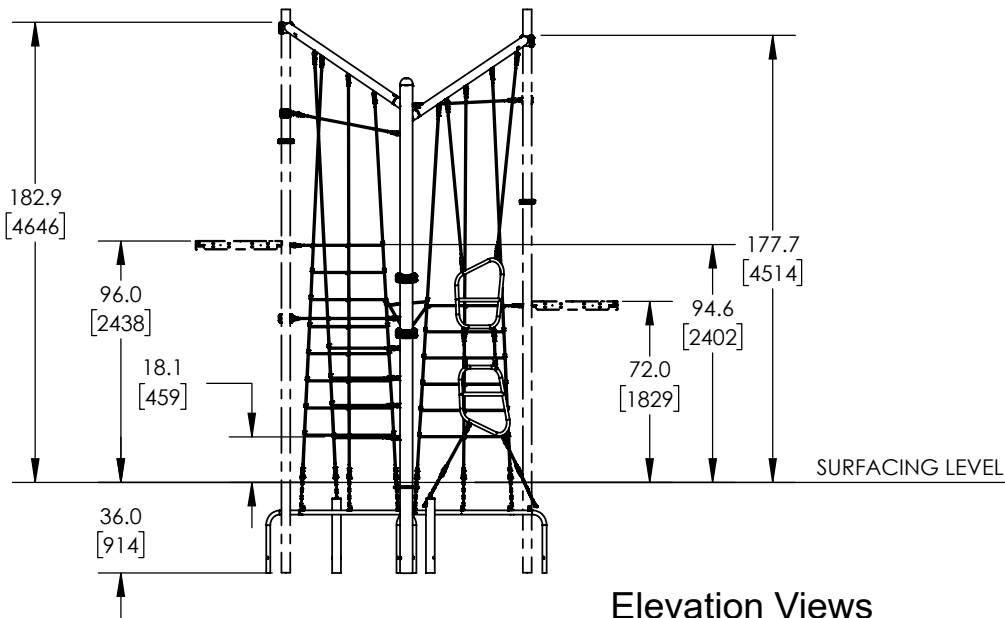
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

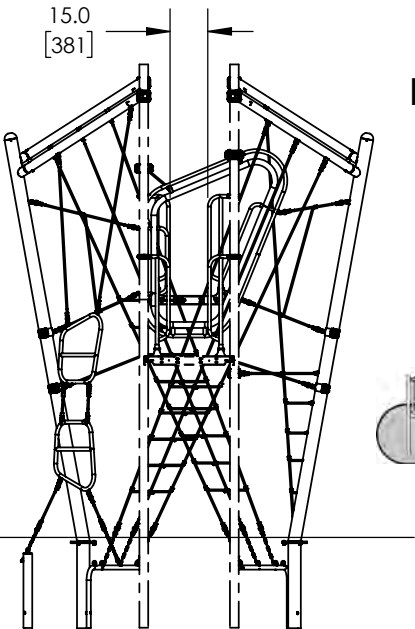
Top View



Footing Diagram



Elevation Views
CH4707

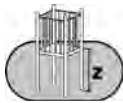
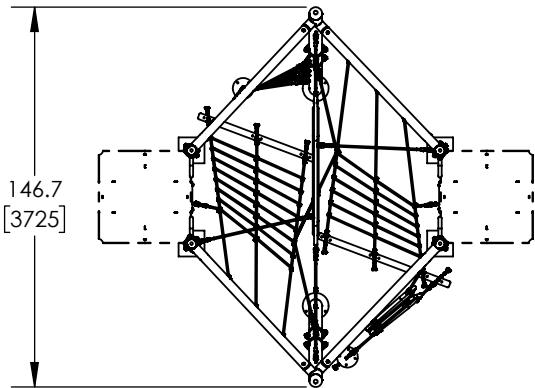


Height of the highest deck

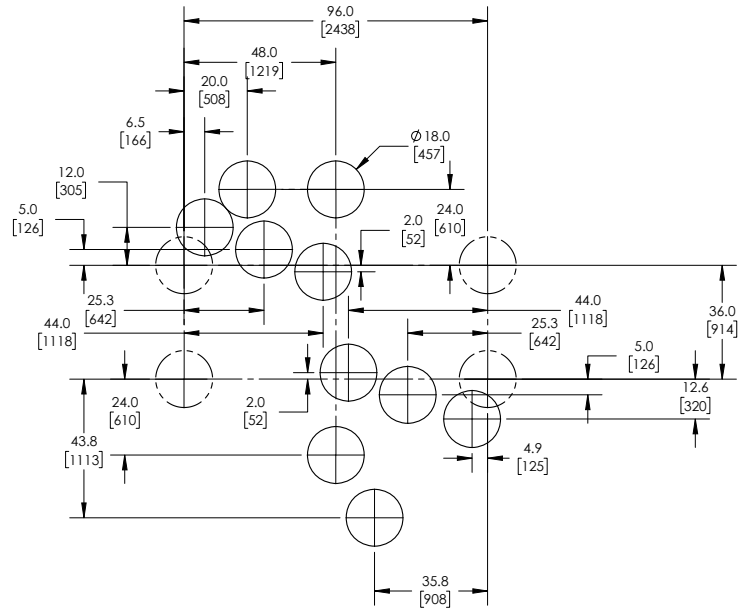


KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

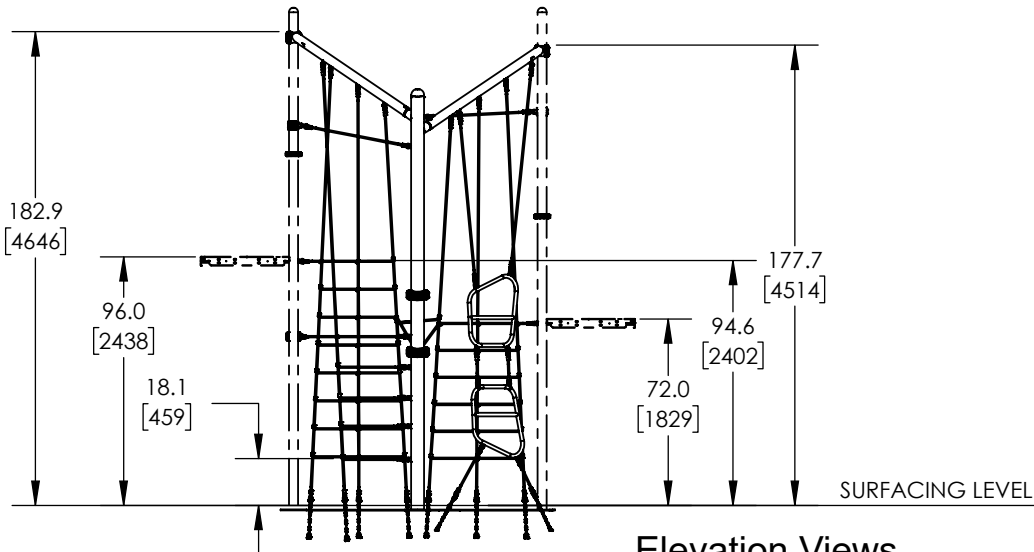
Top View



Height of the highest deck

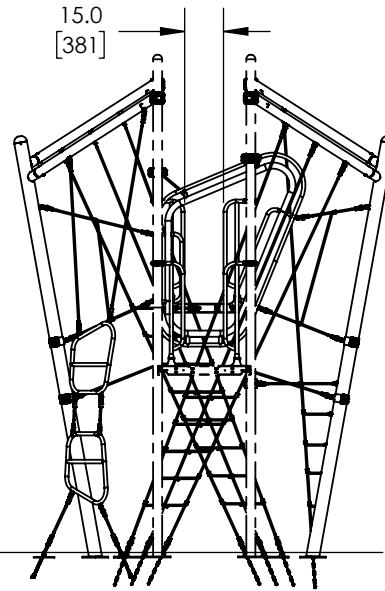


Footing Diagram

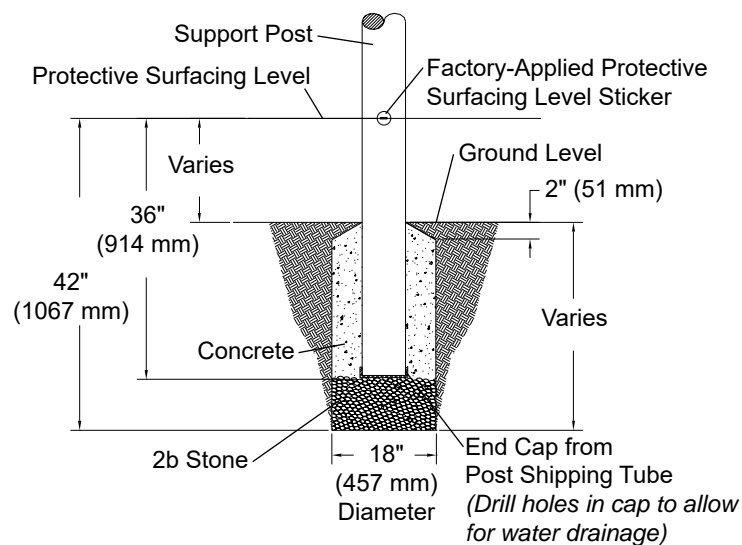


Elevation Views

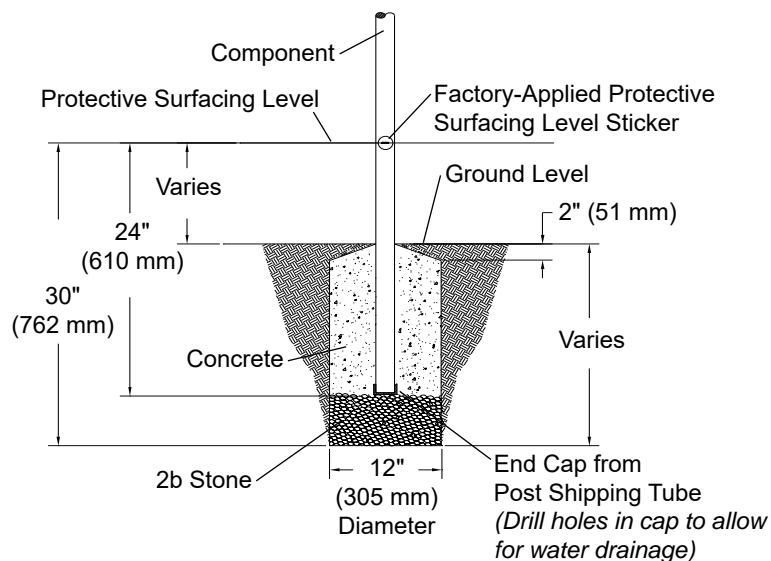
CH4707S



Installation Instructions



Support Post Footing Detail (ASTM/CSA)

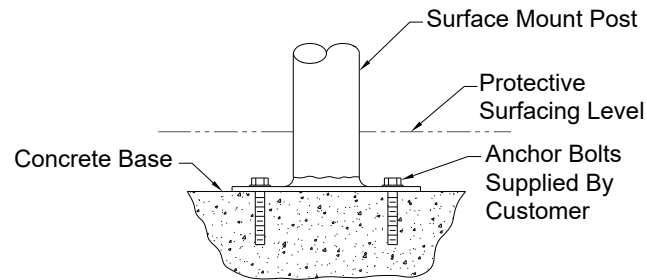


Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

FOOTING NOTES

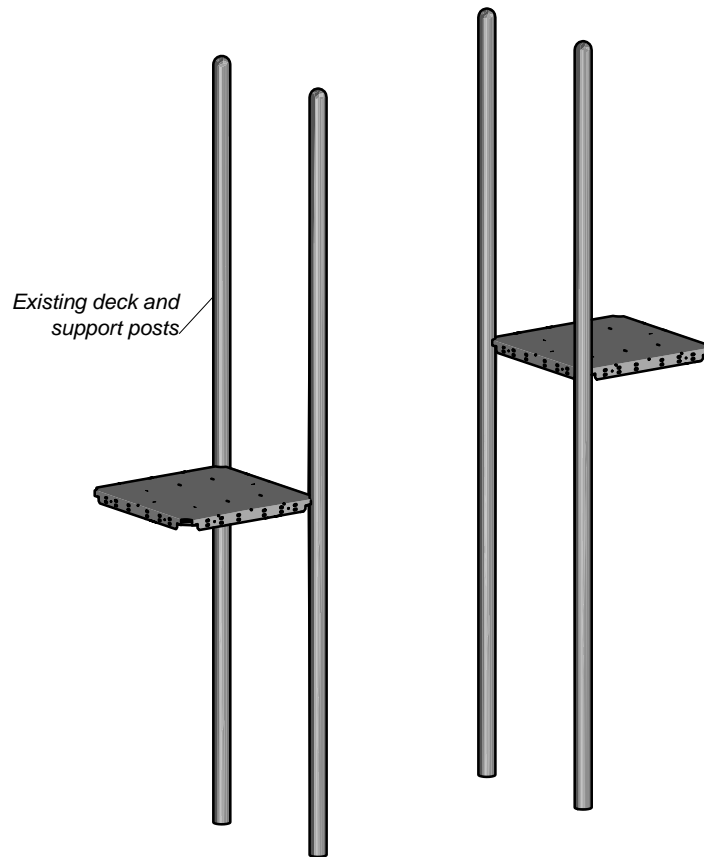
- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in Handbook for Public Playground Safety published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

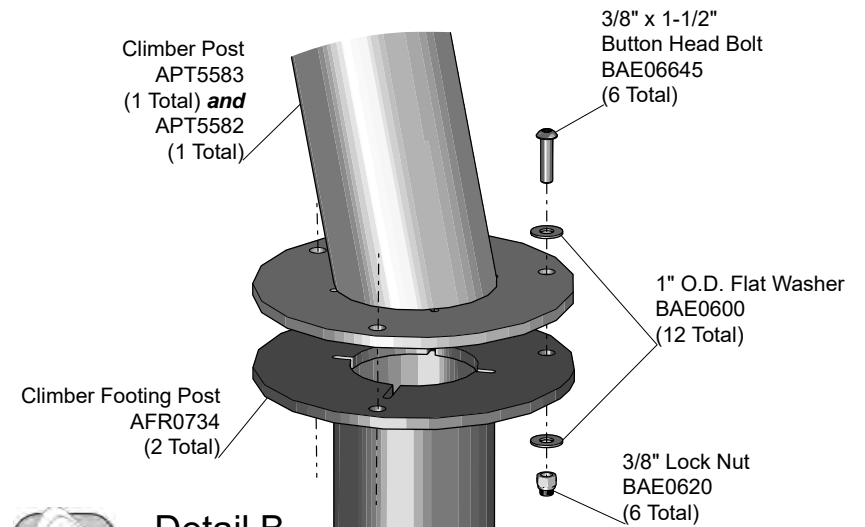
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 24.

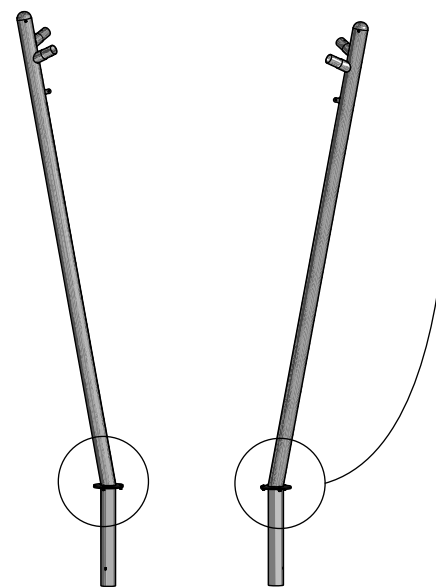
Note: Refer to the Elevation View for correct height placement for the post frames on the support posts. Mark the support posts at the correct height to assist with attachment of post frames.



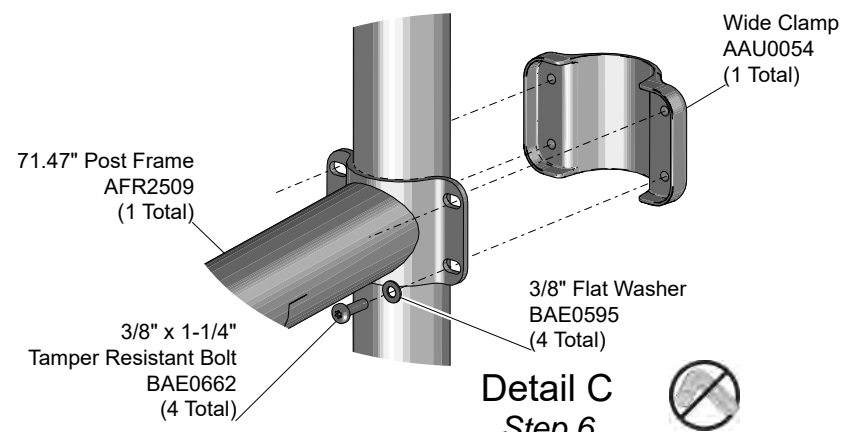
Detail A
Step 4
Mark support posts.



Detail B
Step 5
(In-ground Mount Only)
Attach the climber footing post to the climber post.

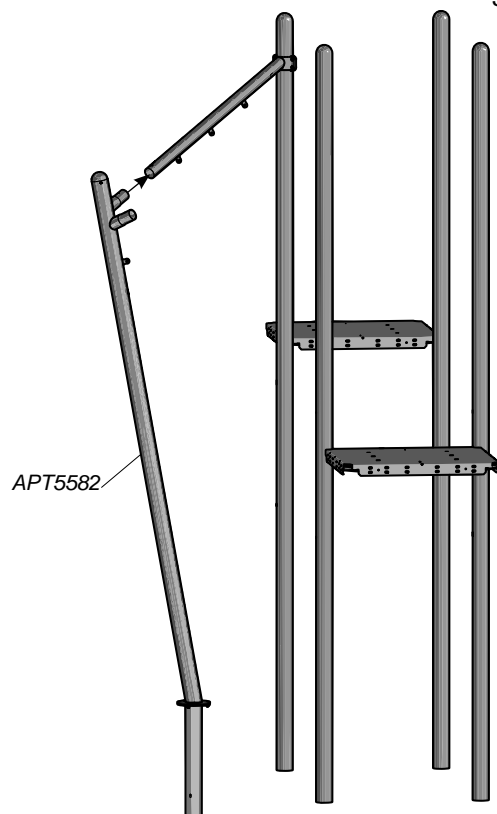


Installation Instructions

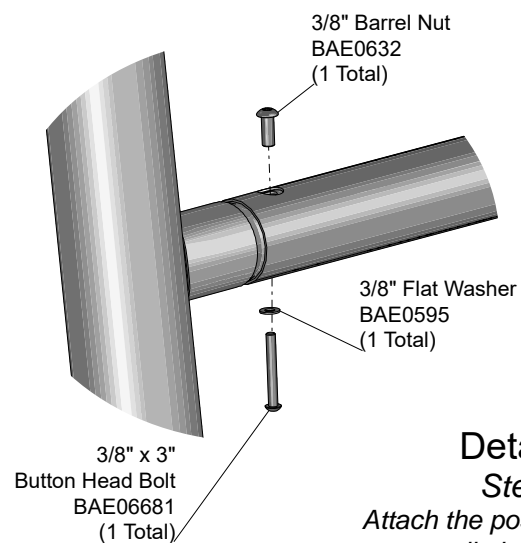
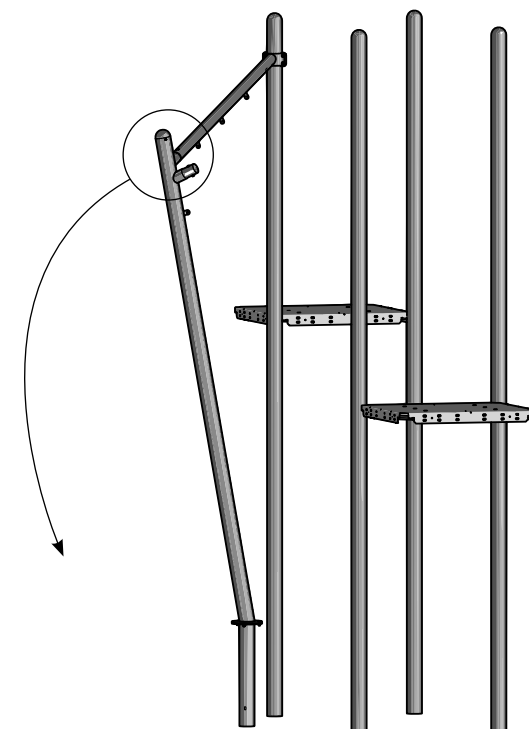


Step 6

Attach the post frame to the designated support post.



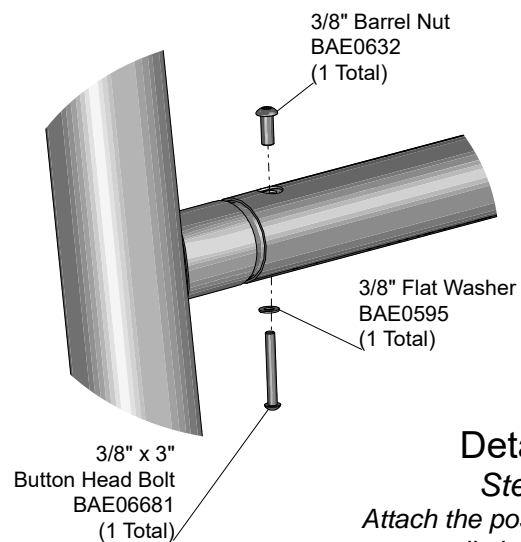
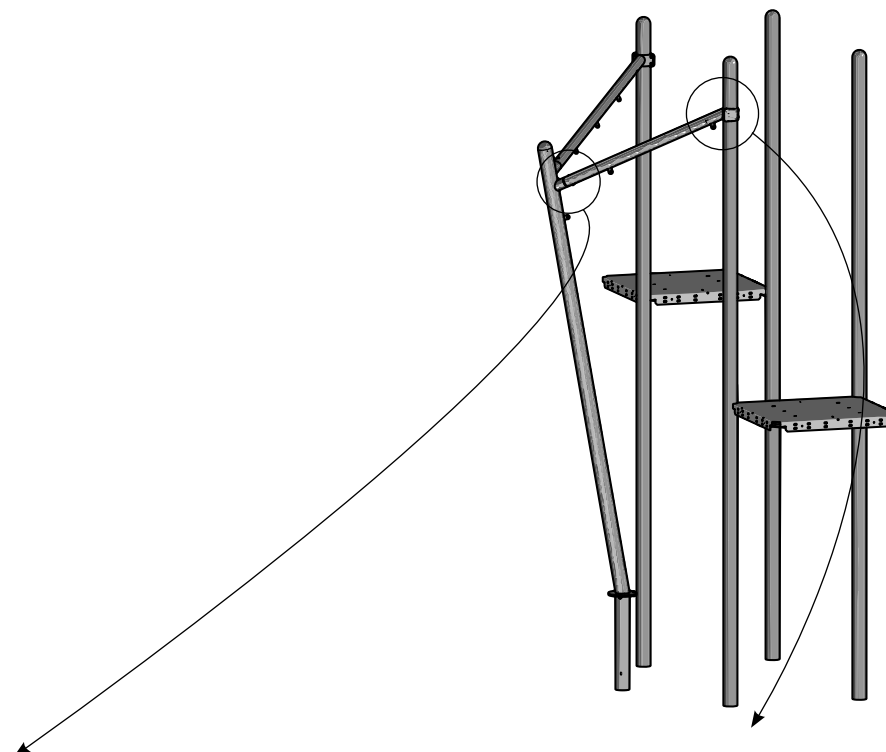
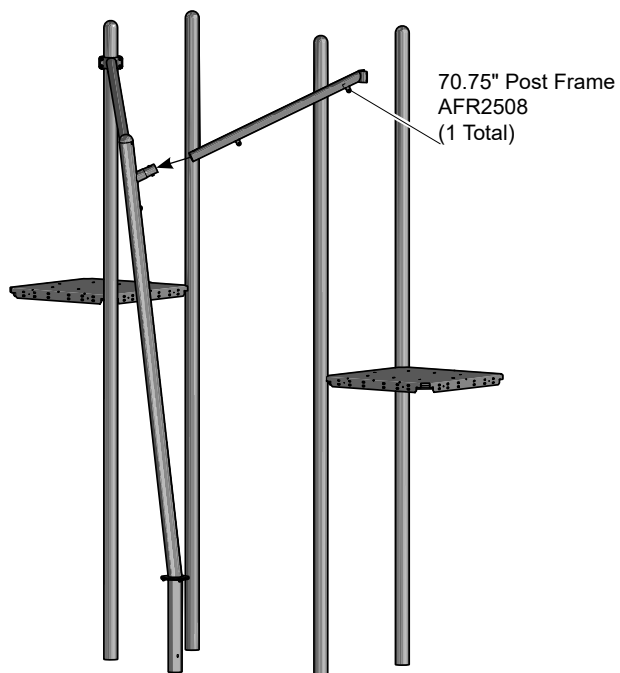
Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame.



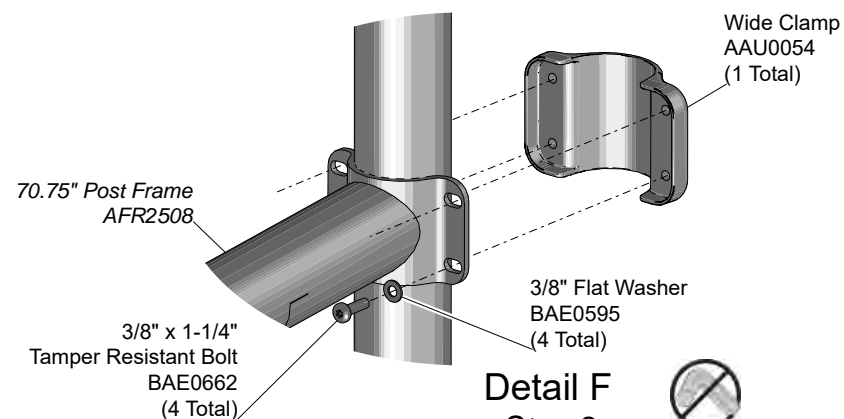
Step 7

Attach the post frame to the climber post.

Installation Instructions

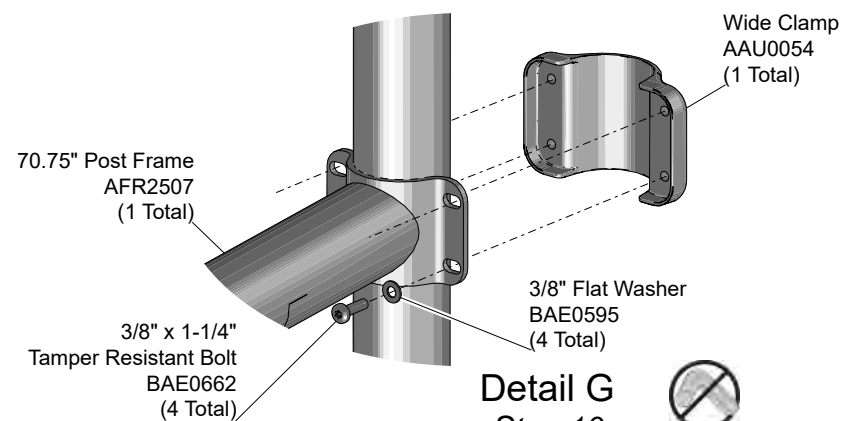


Detail E
Step 8
*Attach the post frame to the
climber post.*



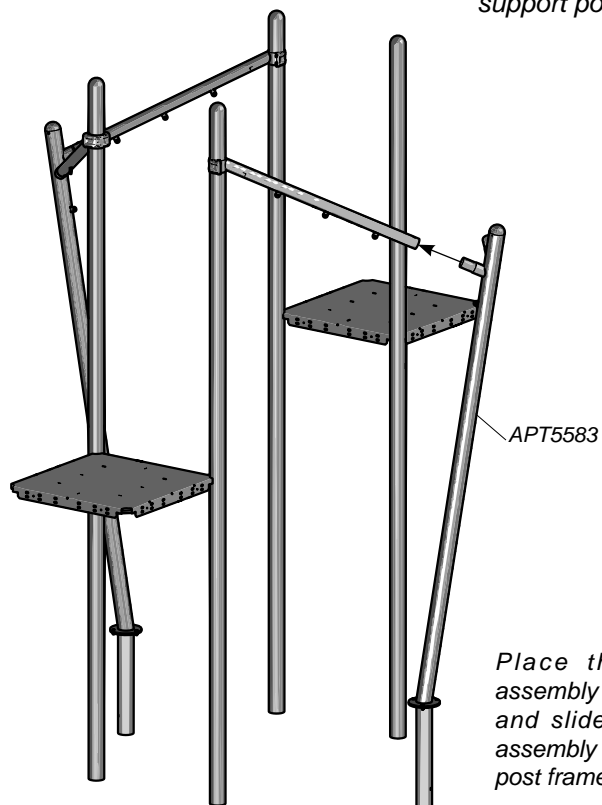
Detail F
Step 9
*Attach the post frame to the designated
support post.*

Installation Instructions

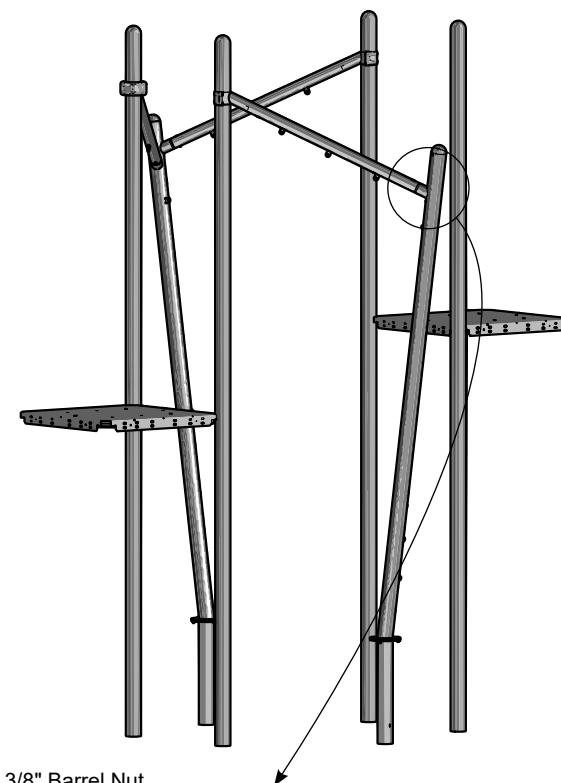


Detail G Step 10

Attach the post frame to the designated support post.



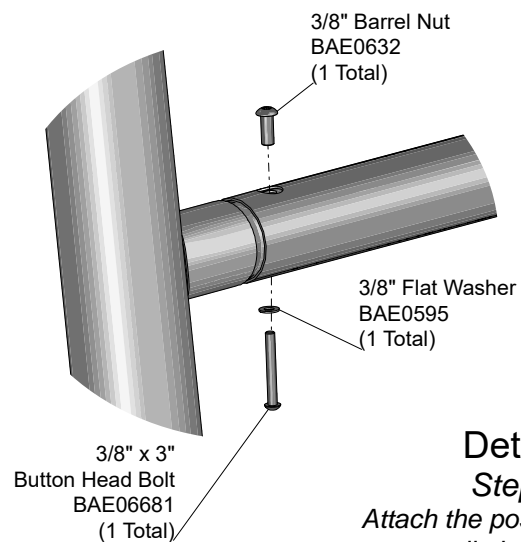
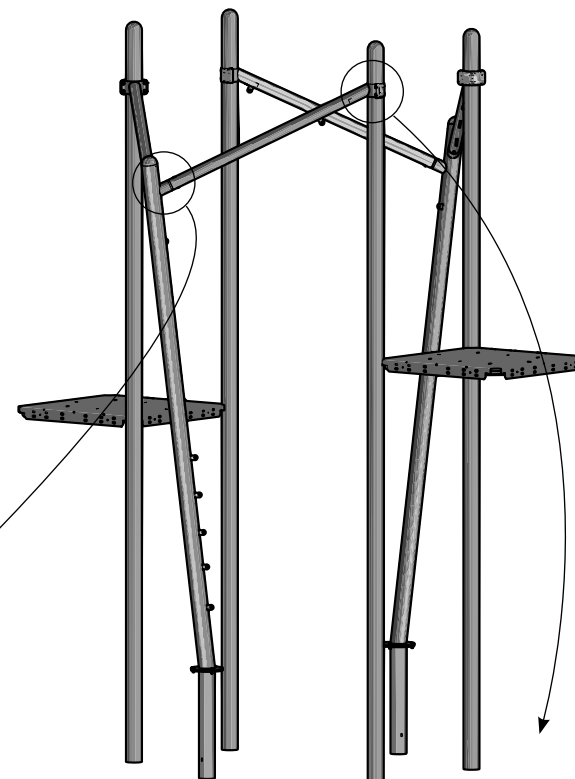
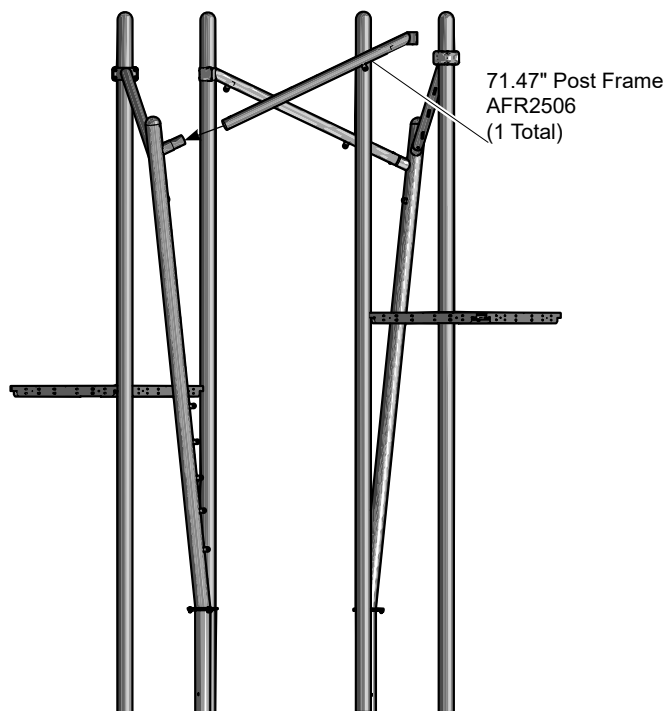
Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame.



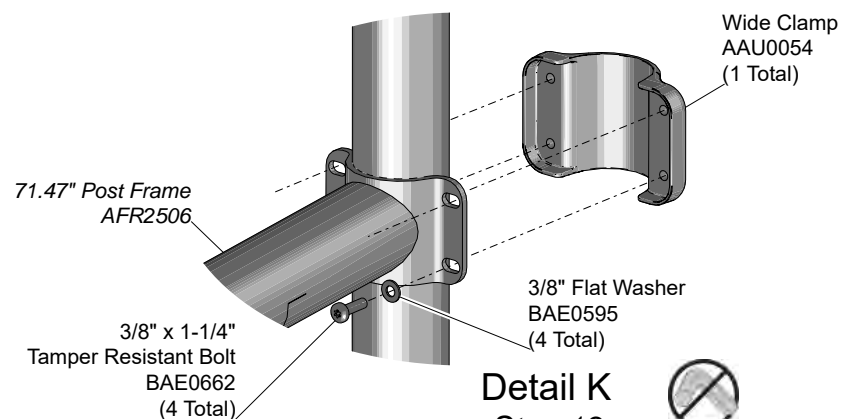
Detail H Step 11

Attach the post frame to the climber post.

Installation Instructions

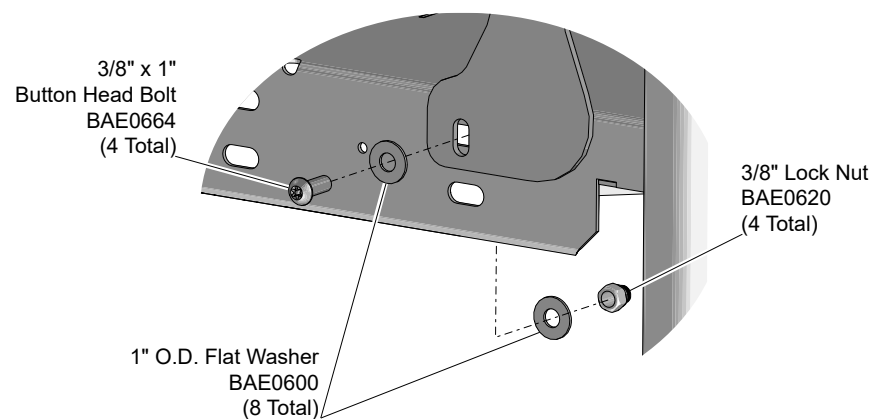
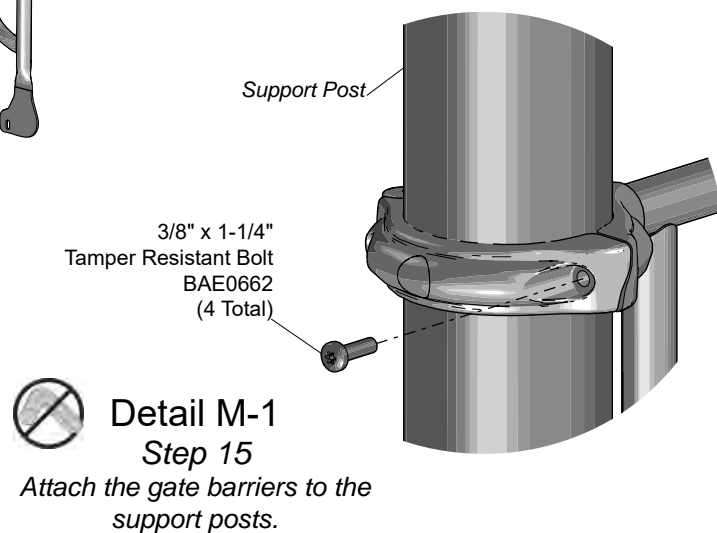
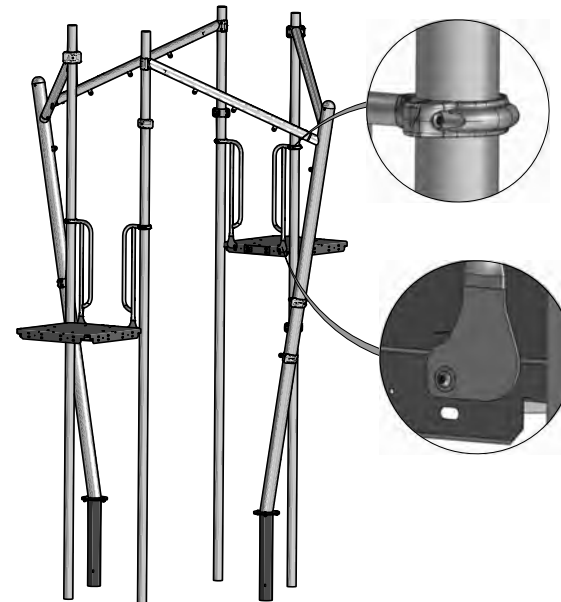
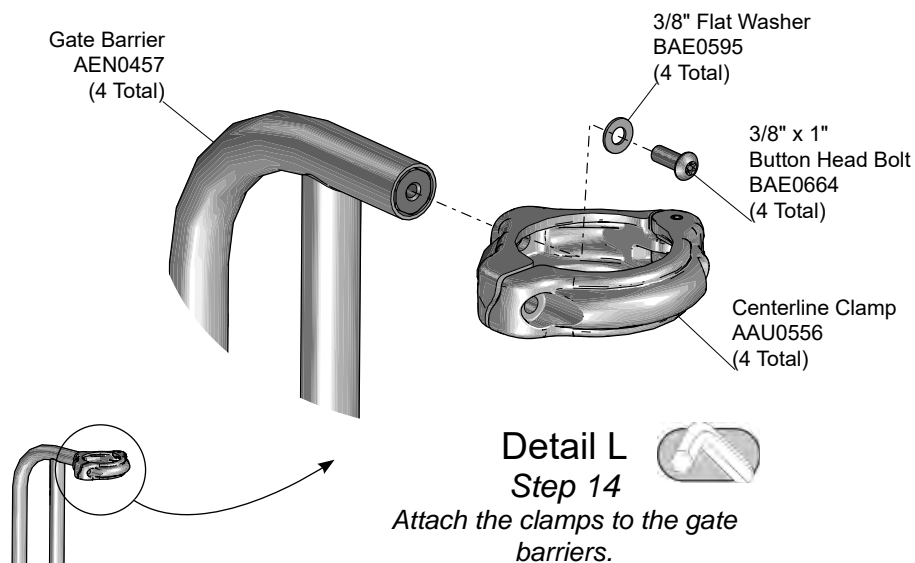


Detail J
Step 12
Attach the post frame to the climber post.

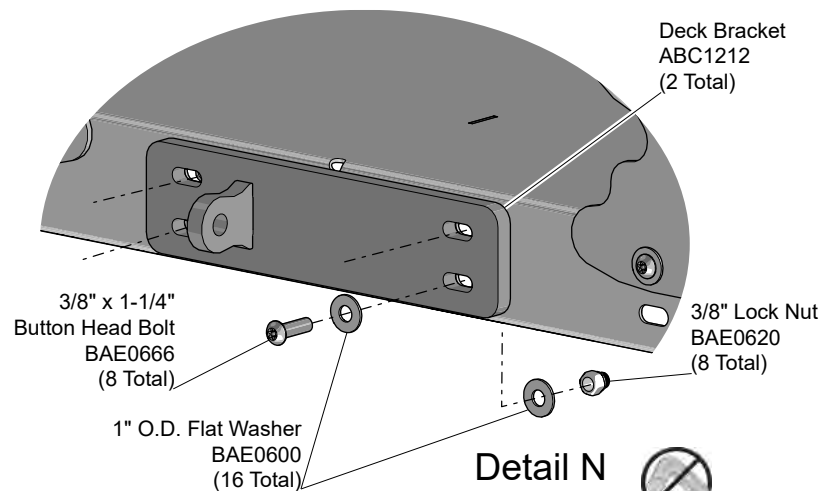


Detail K
Step 13
Attach the post frame to the designated support post.

Installation Instructions

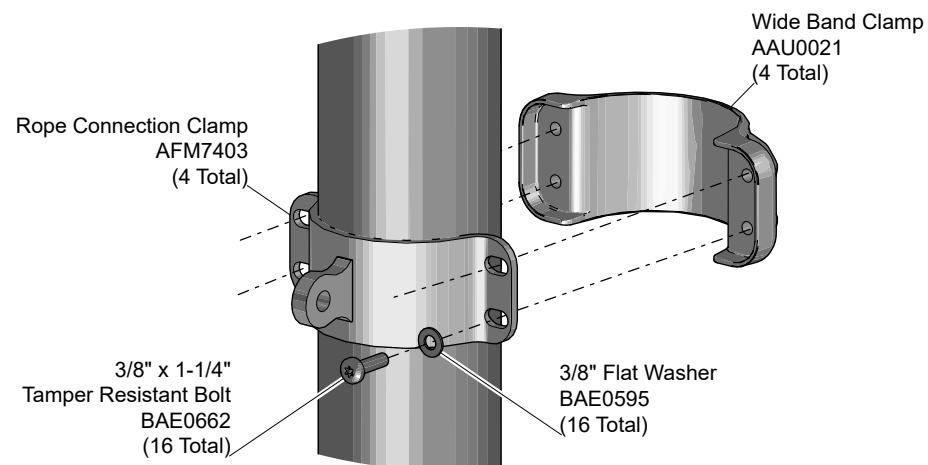
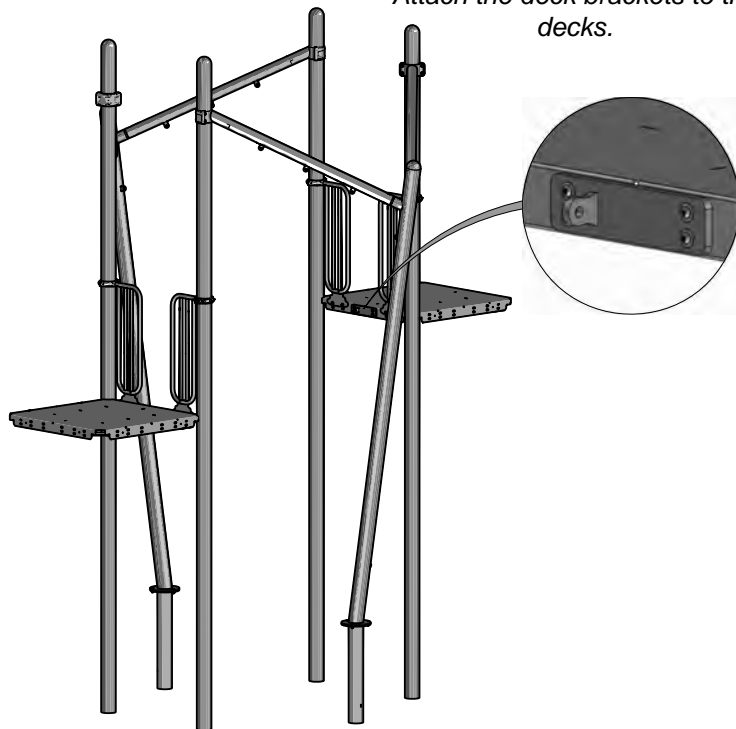


Installation Instructions



Detail N
Step 16

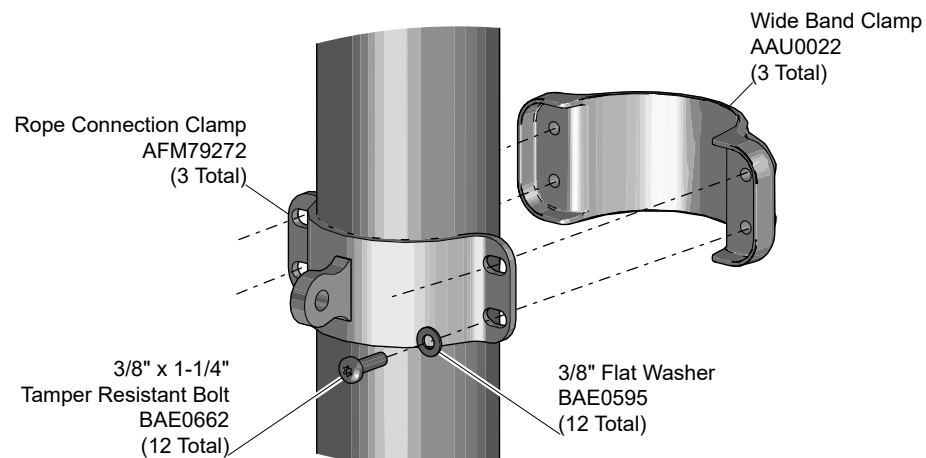
Attach the deck brackets to the decks.



Detail O-1
Step 17

Attach the rope clamps to the posts.

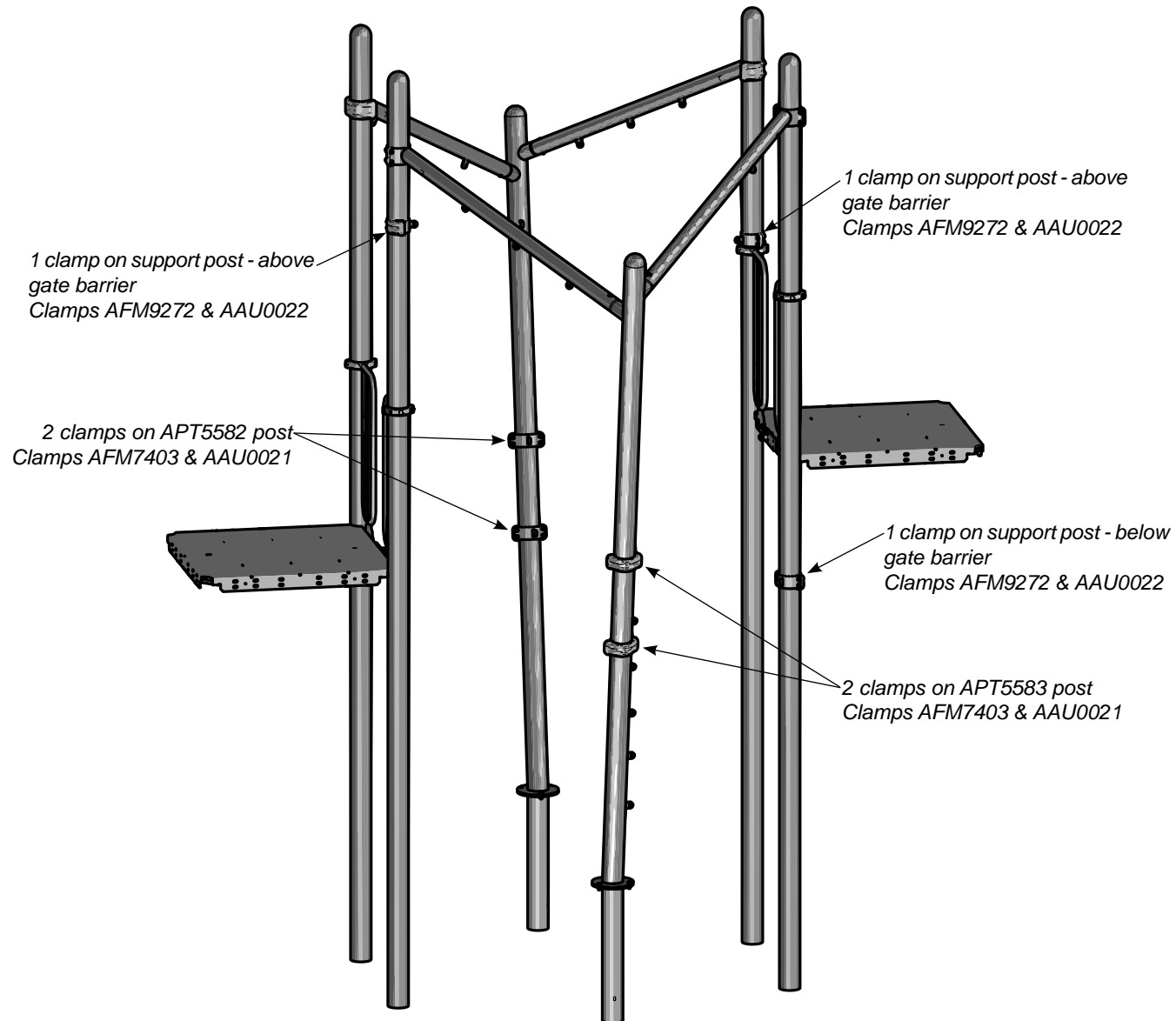
Important Note: Keep rope clamp connections loose to assist with installation of ropes. See next page for clamp locations.



Detail O-2
Step 17

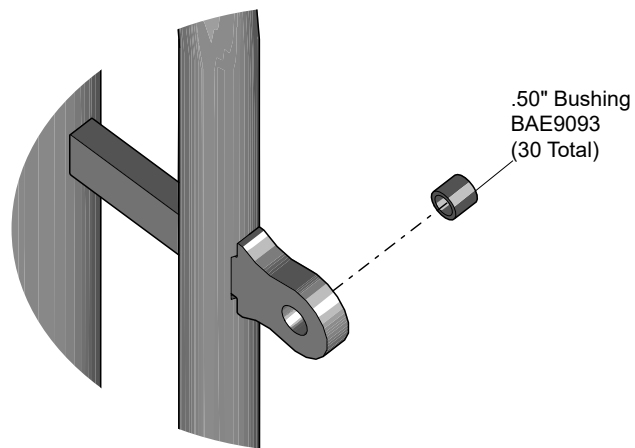
Attach the rope clamps to the posts.

Installation Instructions

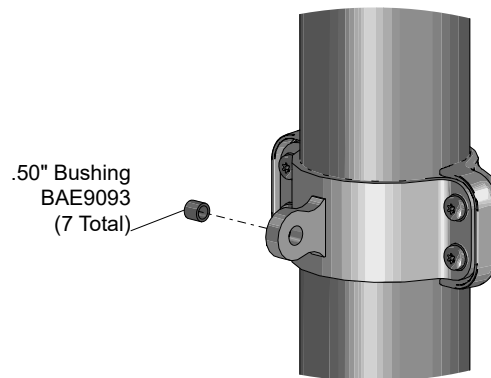


Rope Clamp Locations

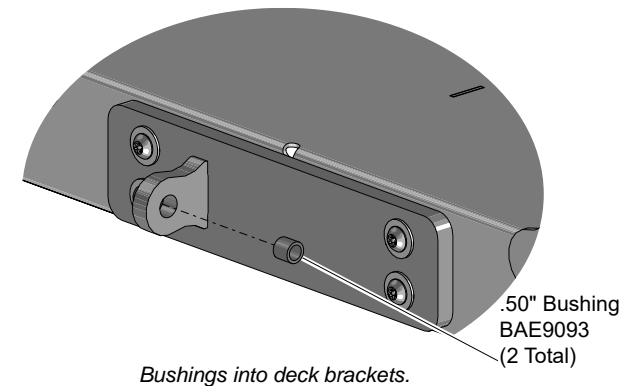
Installation Instructions



Bushings into frames / support posts.



Bushings into clamps.



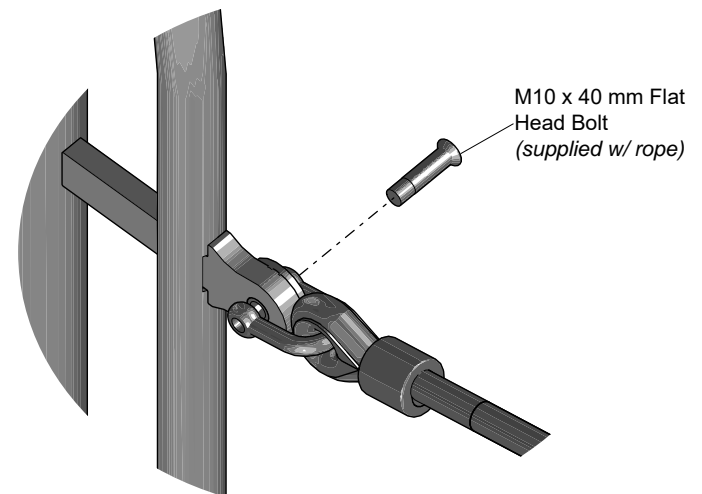
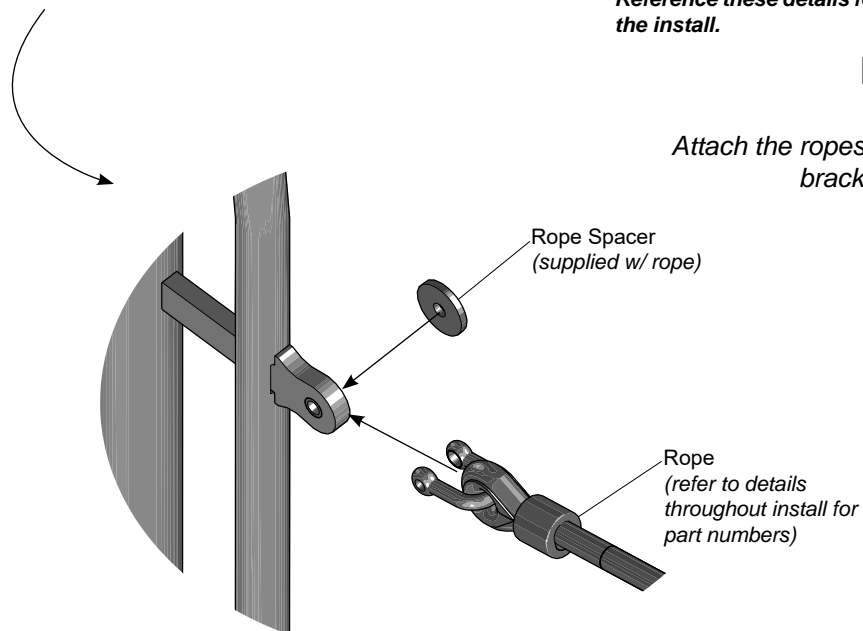
Bushings into deck brackets.

Important Note: These are generic details showing the attachment of the ropes to the frames / support posts / brackets and clamps. Reference these details for each rope connection throughout the install.

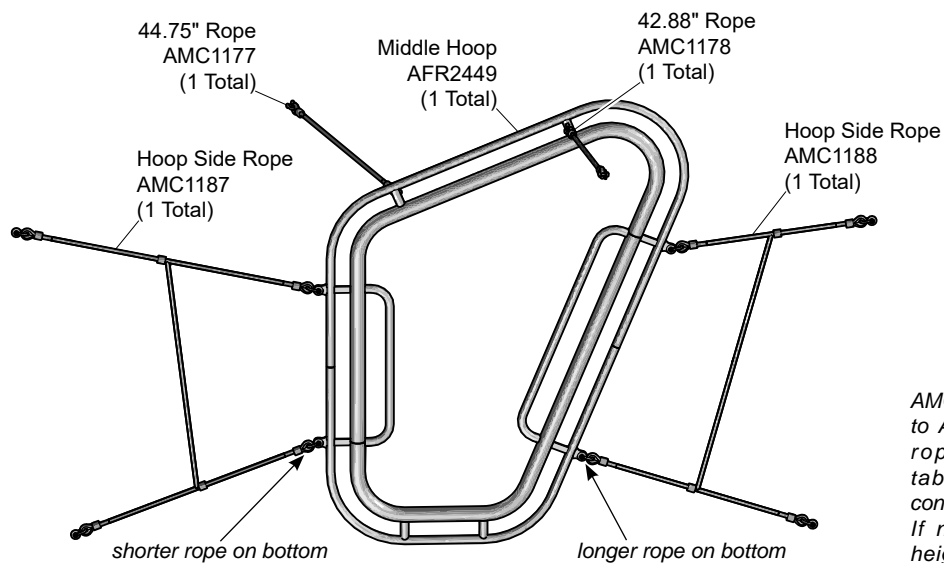
Detail P Step 18



Attach the ropes to the frames, posts, deck brackets and clamps.



Installation Instructions



Detail Q Step 19



Attach the side ropes to the middle hoop and attach to the assembly.

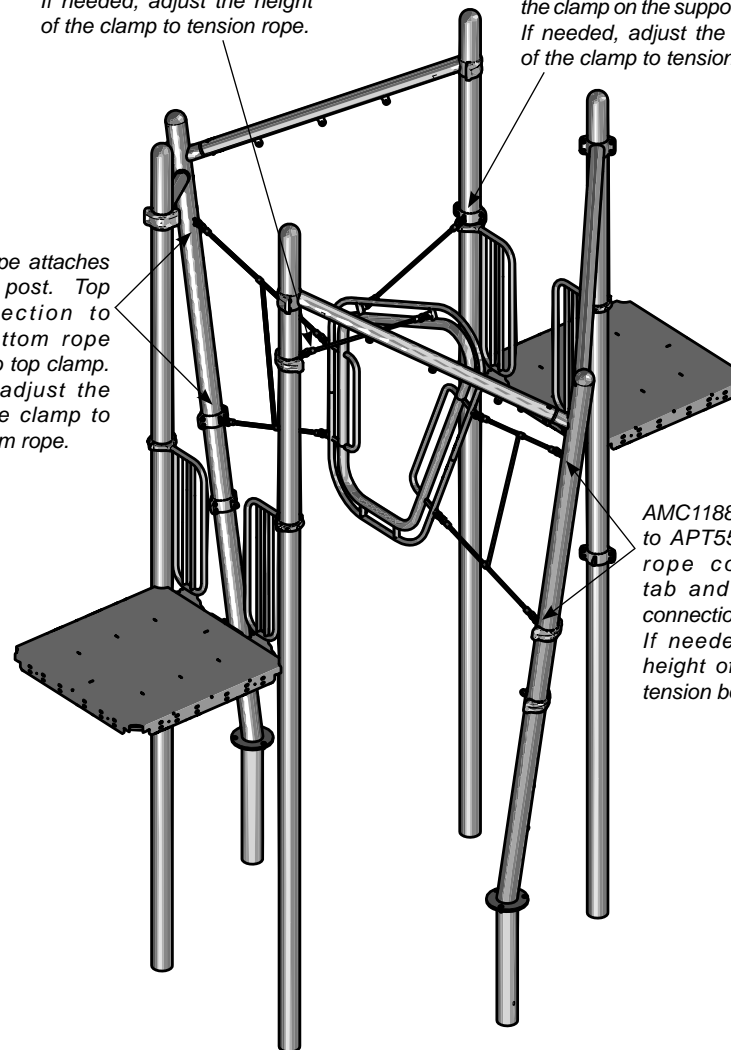
Attach the side ropes to the assembly first.

AMC1178 rope attaches to the clamp on the support post. If needed, adjust the height of the clamp to tension rope.

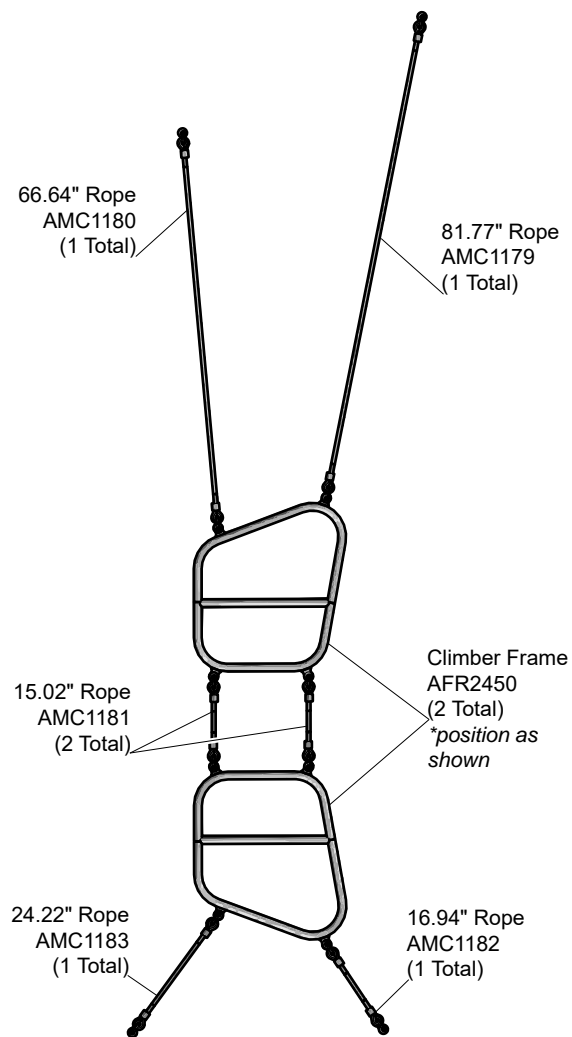
AMC1187 rope attaches to APT5582 post. Top rope connection to tab and bottom rope connection to top clamp. If needed, adjust the height of the clamp to tension bottom rope.

AMC1177 rope attaches to the clamp on the support post. If needed, adjust the height of the clamp to tension rope.

AMC1188 rope attaches to APT5583 post. Top rope connection to tab and bottom rope connection to top clamp. If needed, adjust the height of the clamp to tension bottom rope.



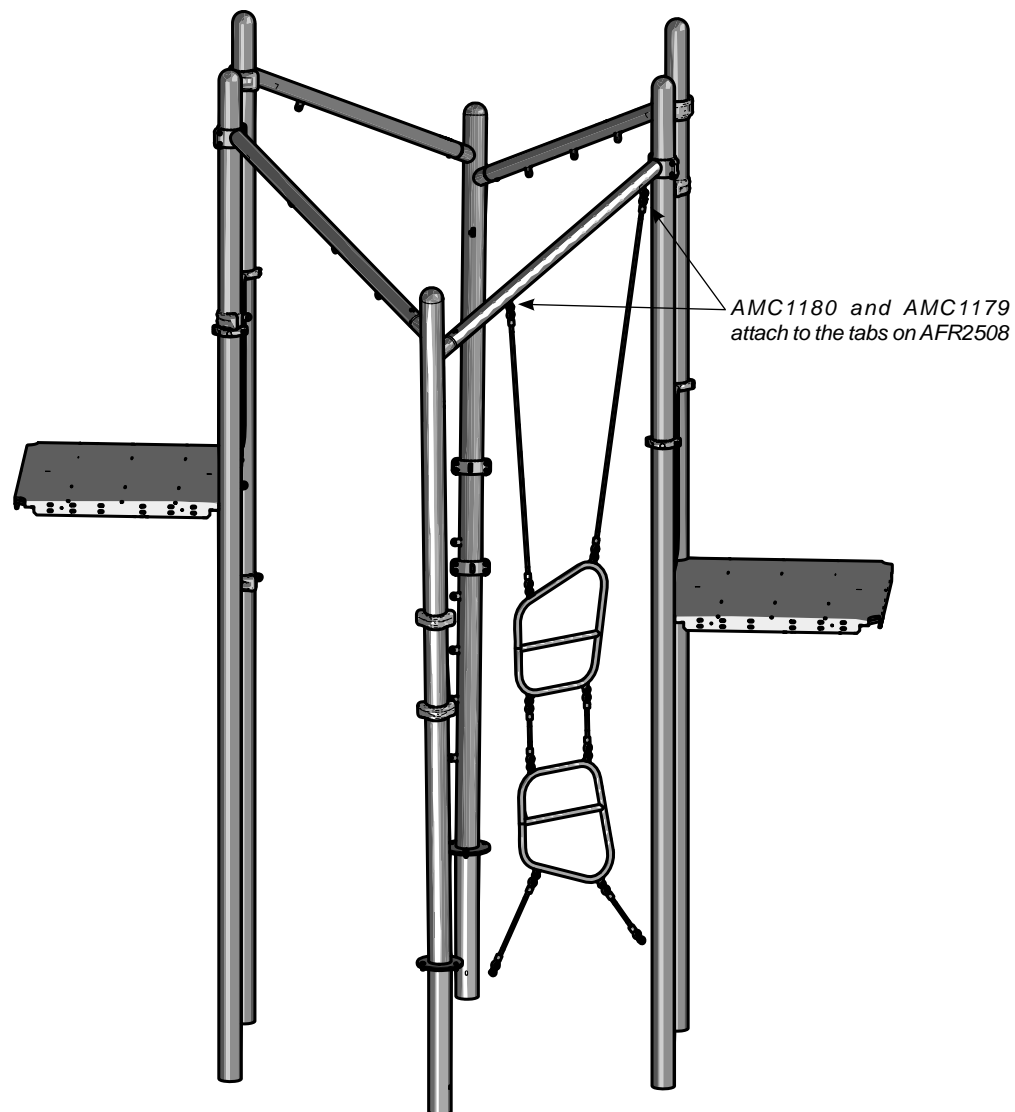
Installation Instructions



Detail R
Step 20



Attach the ropes to the climber frames and attach to the assembly.



**Other ropes are not shown to assist with viewing of connections.*

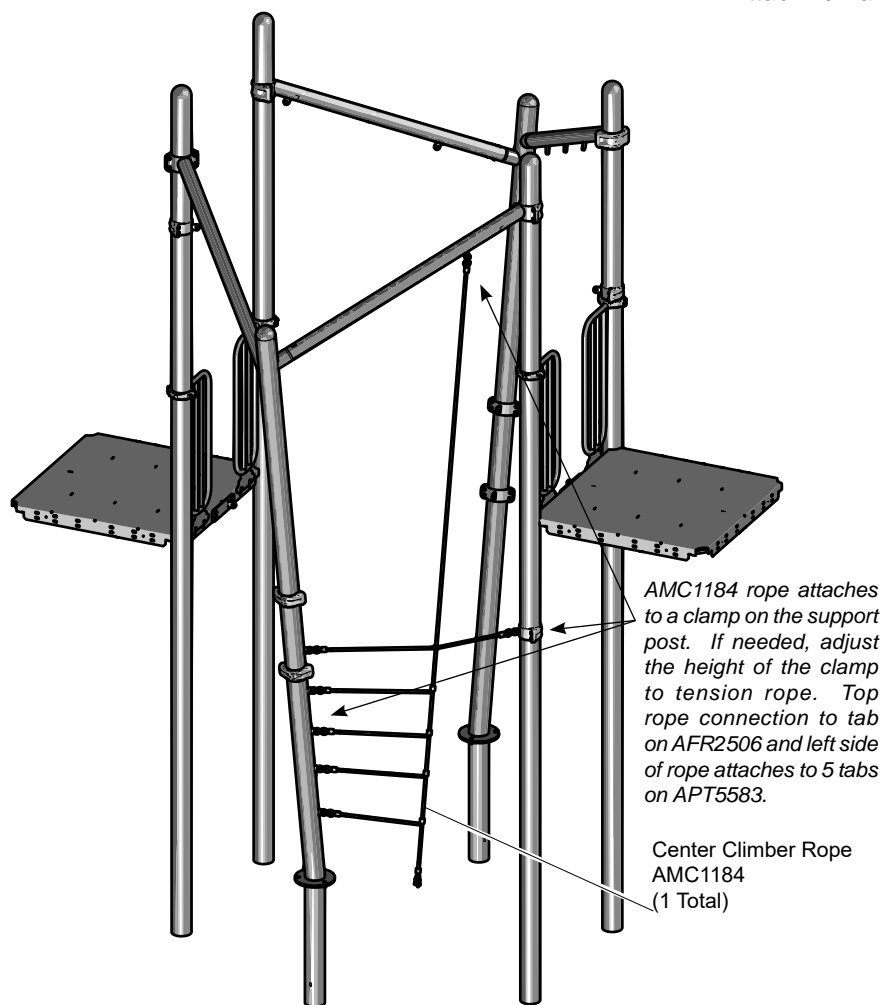
Installation Instructions

Detail S

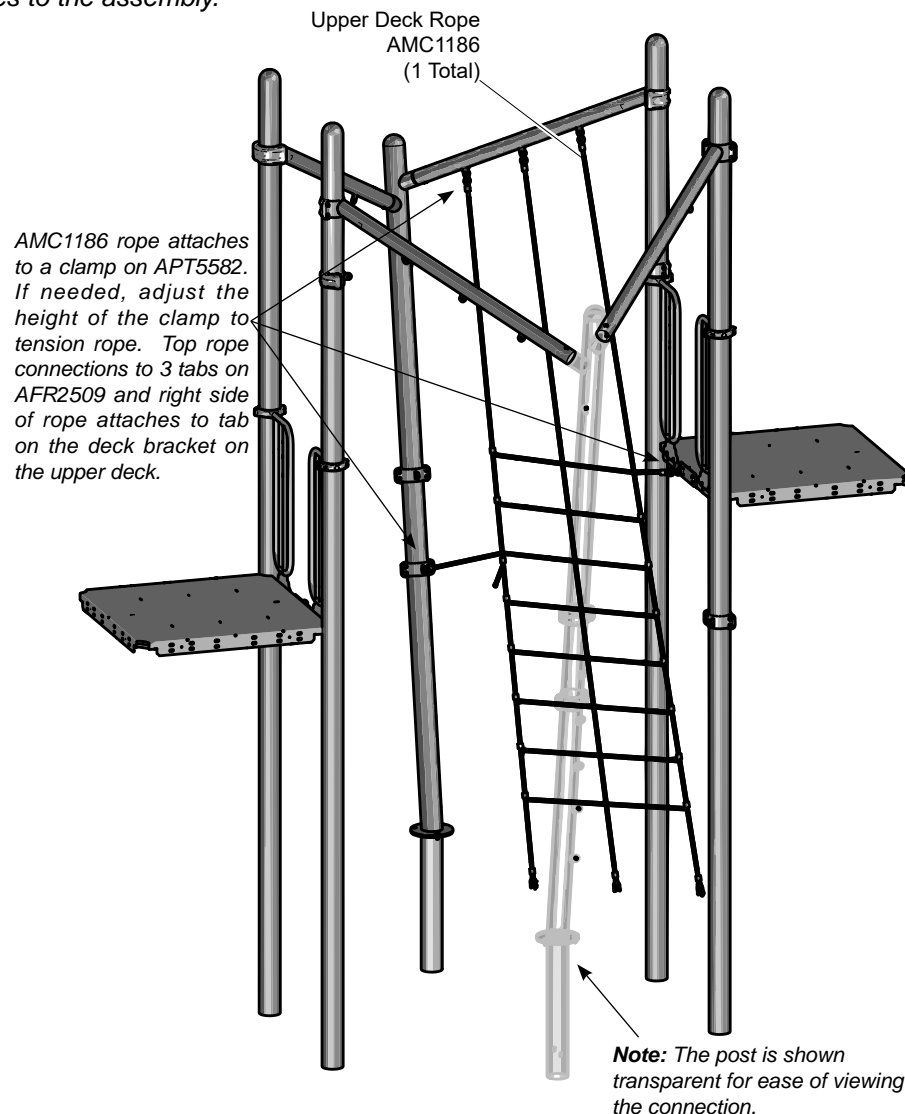
Step 21



Attach remaining ropes to the assembly.



*Other ropes are not shown to assist with viewing of connections.



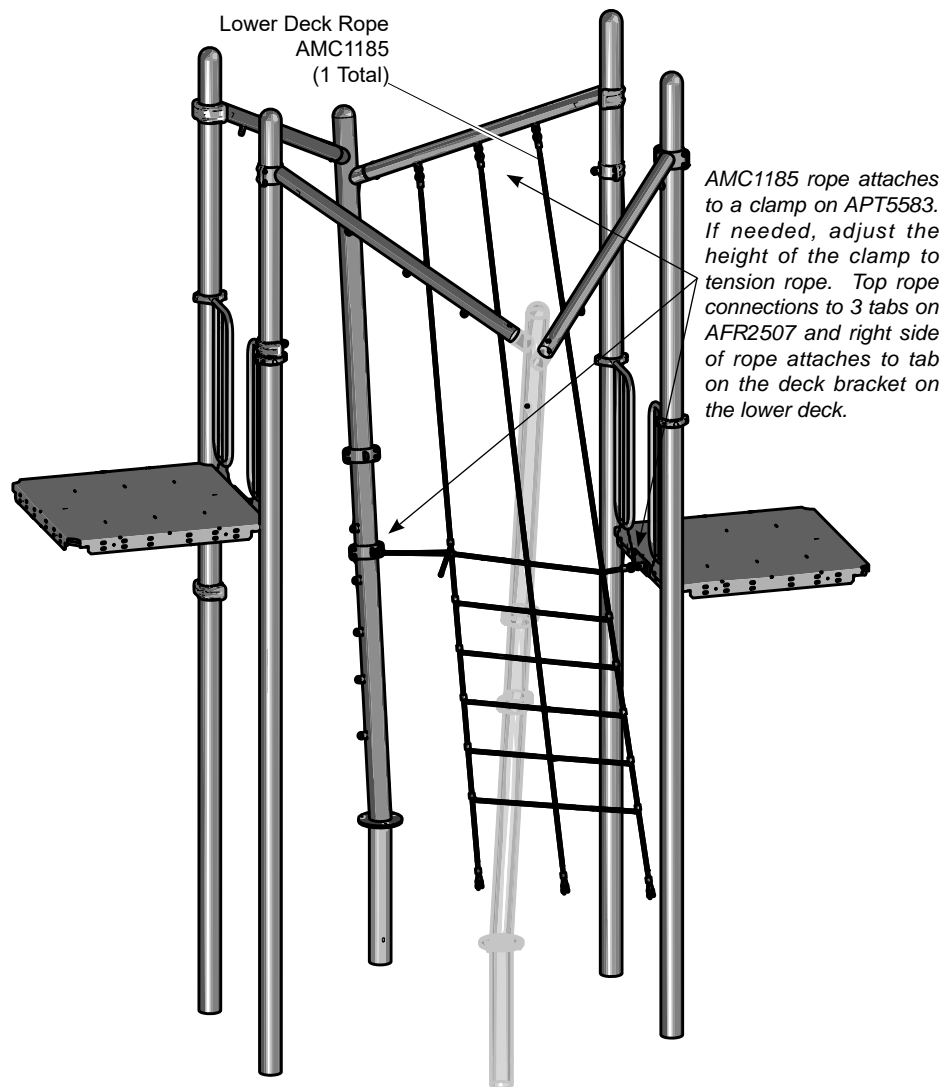
*Other ropes are not shown to assist with viewing of connections.

Installation Instructions

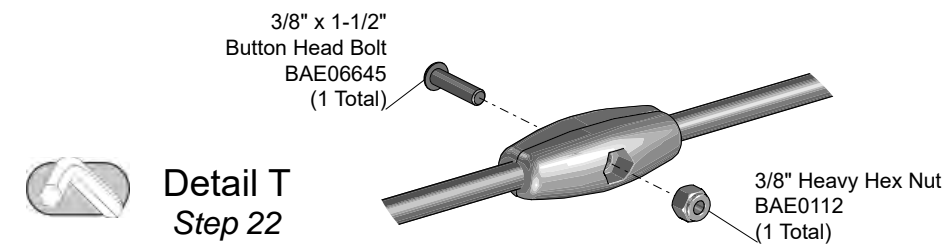
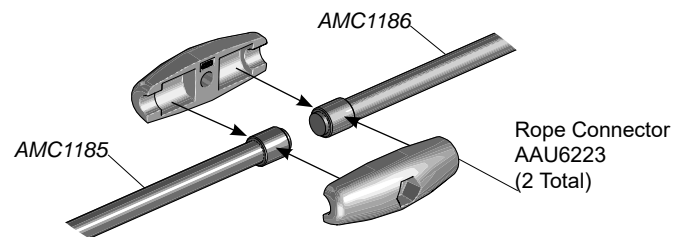
Detail S

Step 21

Attach remaining ropes to the assembly.



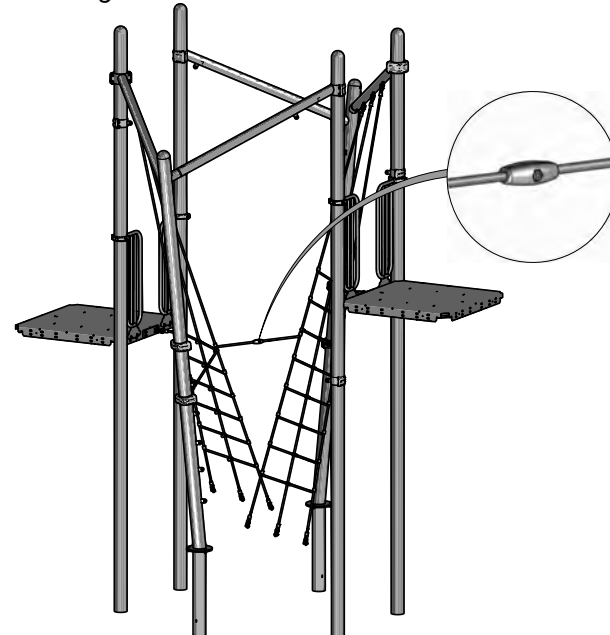
*Other ropes are not shown to assist with viewing of connections.



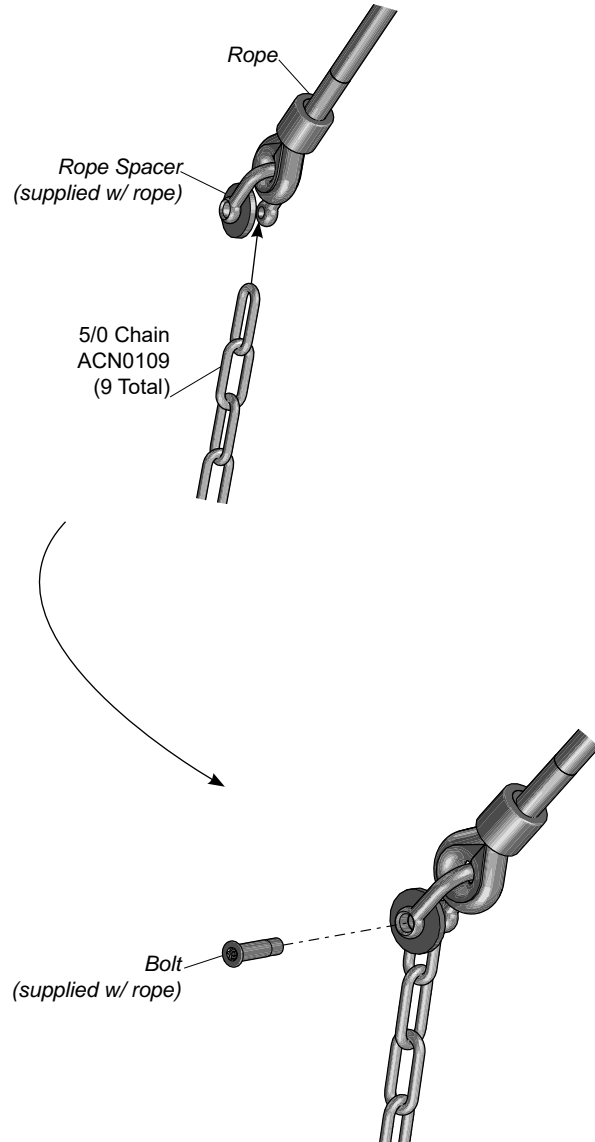
Detail T

Step 22

Attach the middle ropes on AMC1185 and AMC1186 together.

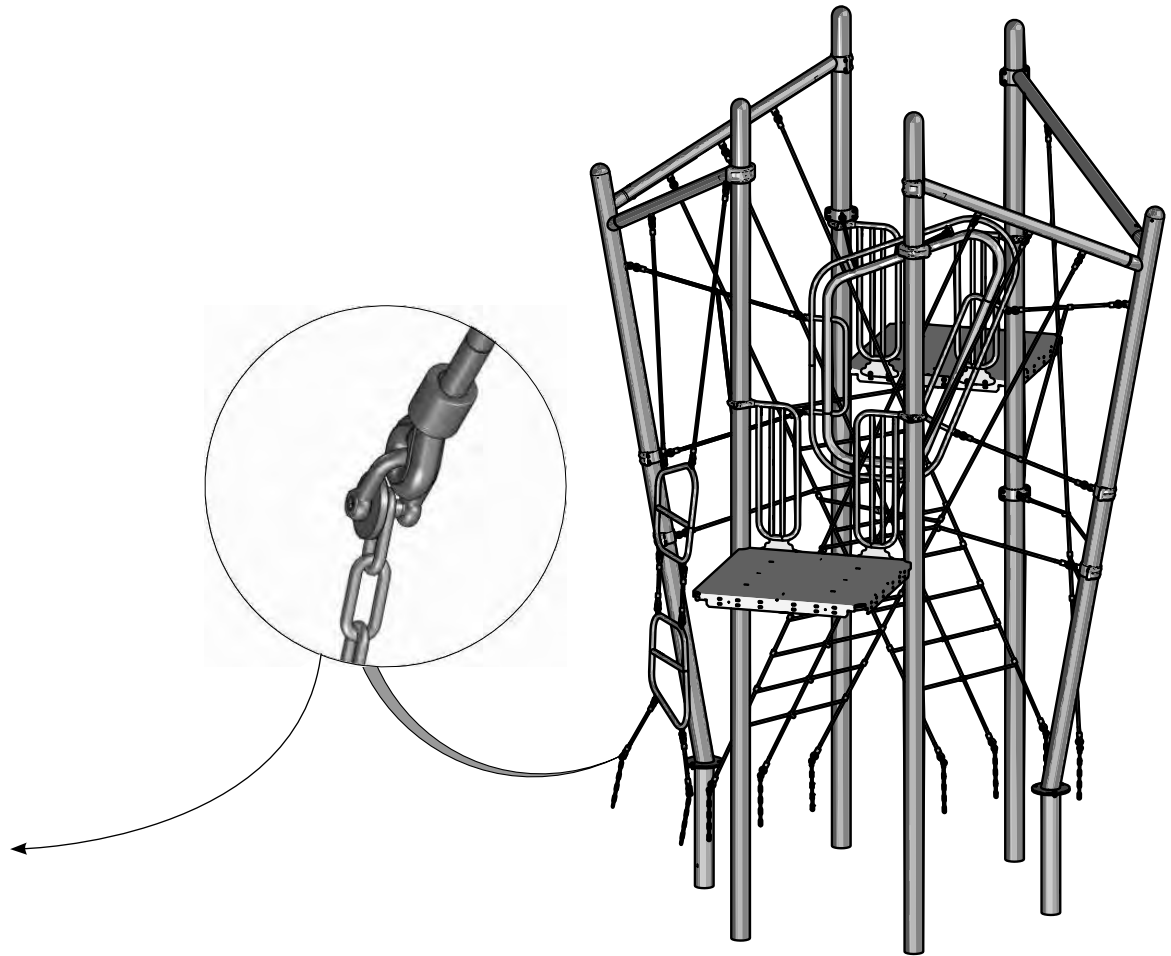


Installation Instructions

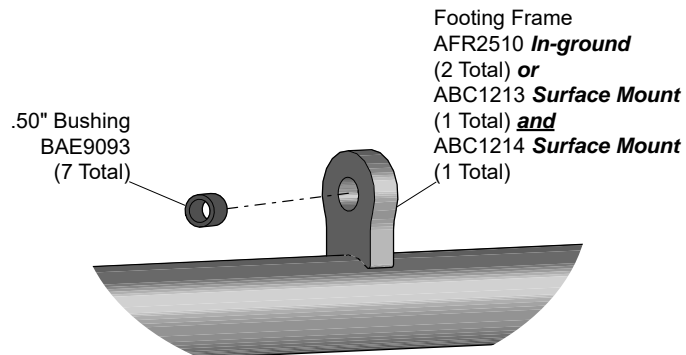


Detail U
Step 23

Attach the chains to the bottom of the ropes.



Installation Instructions

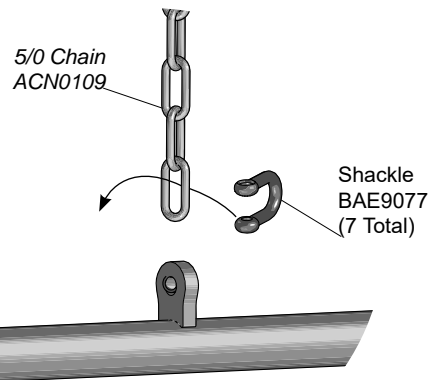


Note: On one of the AFR2510 footing frames, you will only need to use 3 bushings. Do not insert a bushing in one of the end tabs (see page 21).

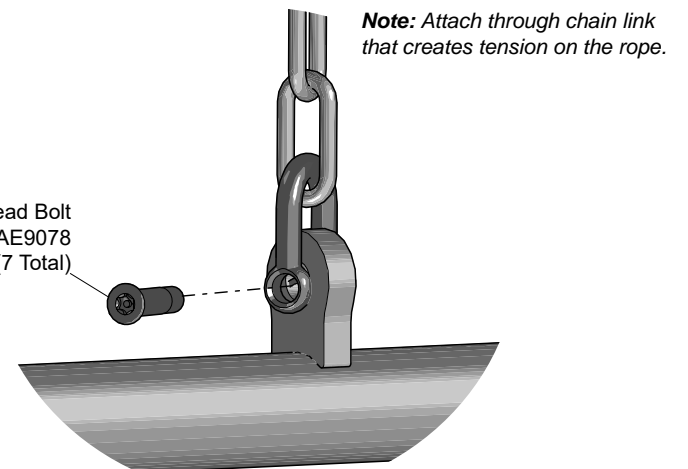


Detail V Step 24

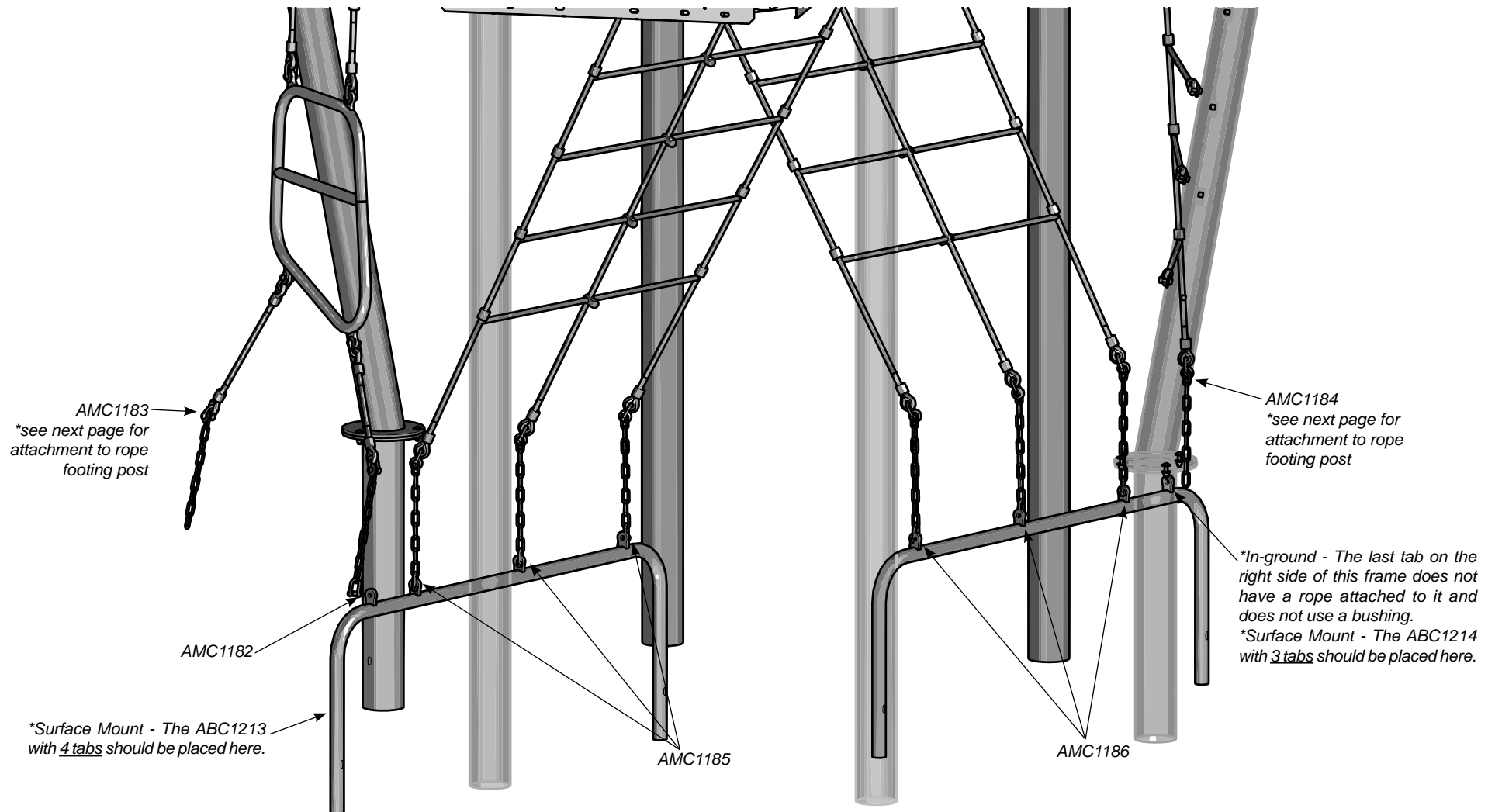
Attach the chains to the footing frames.



M10 x 40 mm Flat Head Bolt
BAE9078
(7 Total)

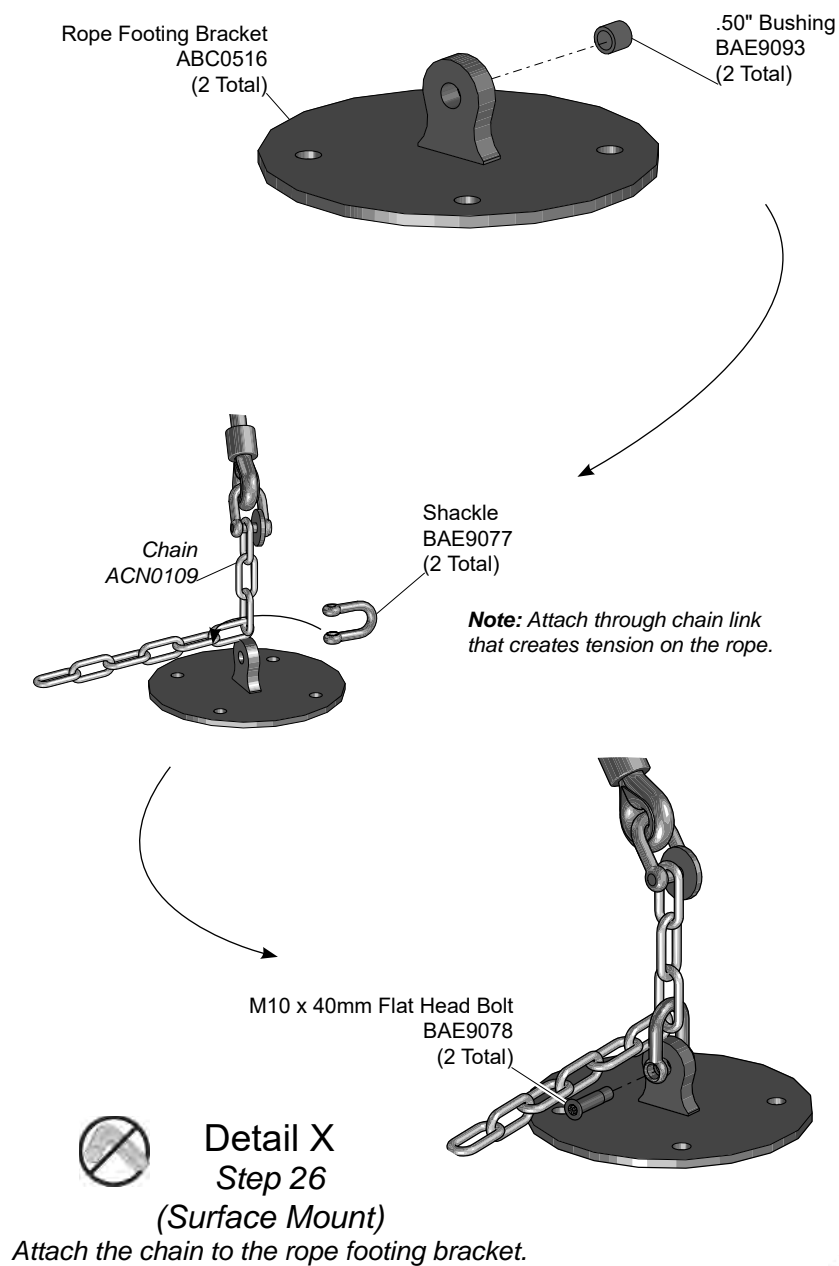
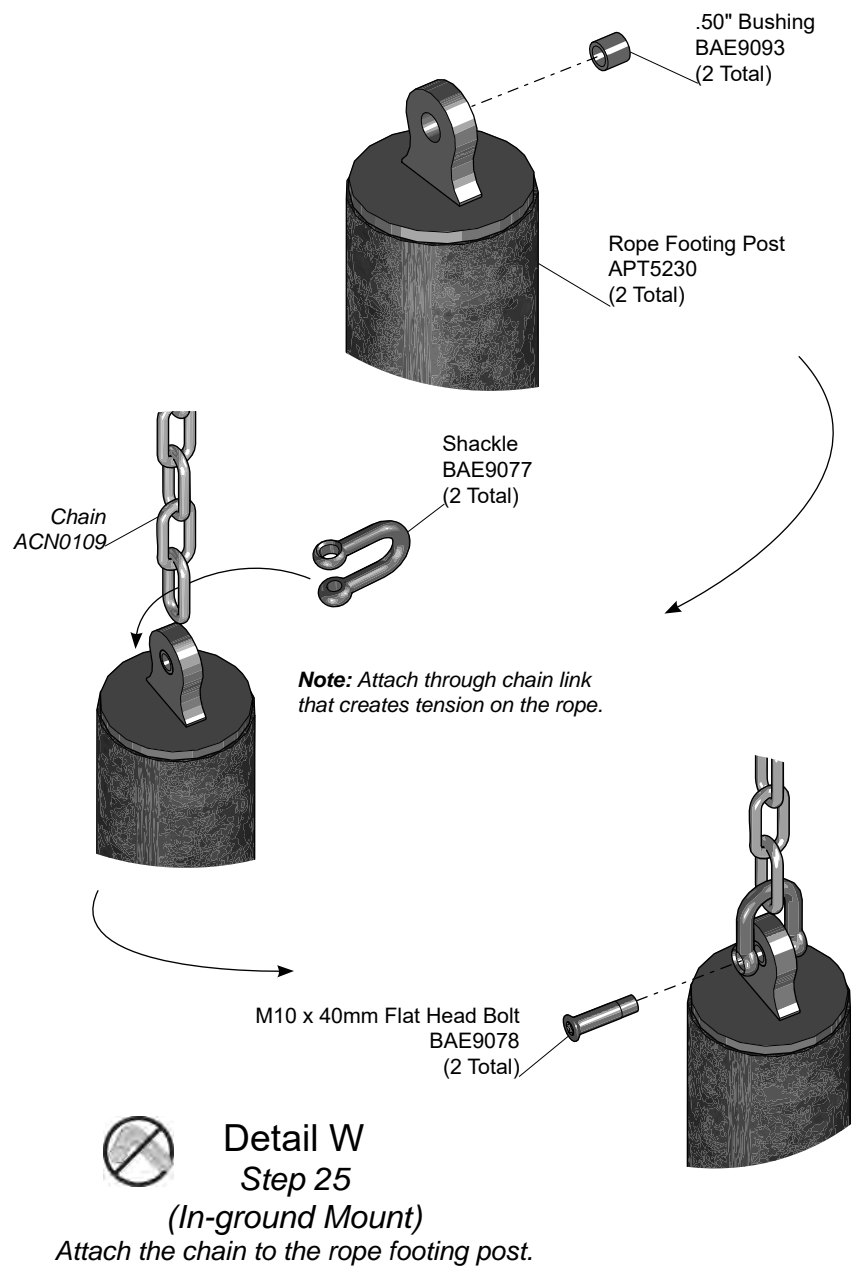


Installation Instructions

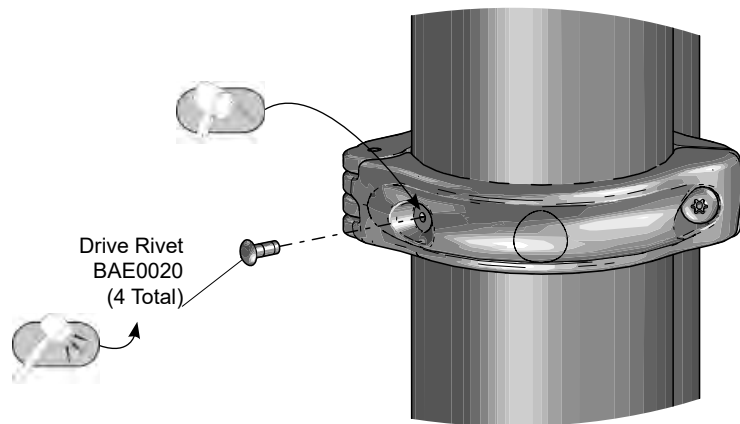


Rope to Footer Frame Locations In-ground Version Shown

Installation Instructions



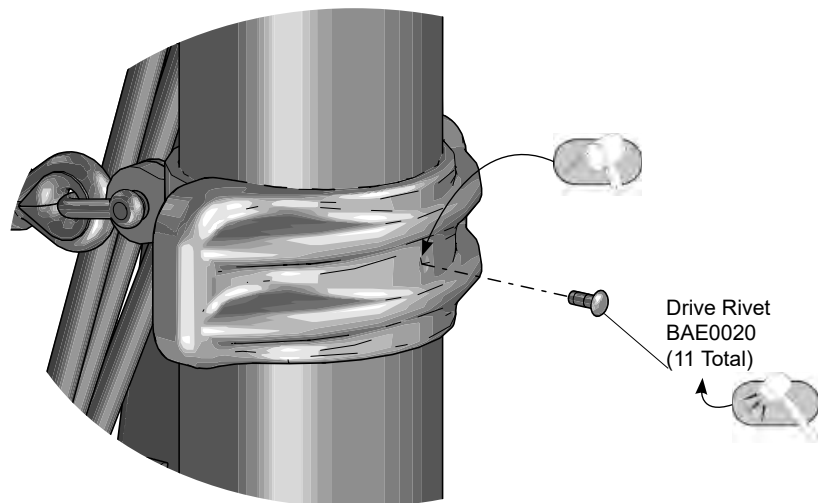
Installation Instructions



Detail Y-1

Step 28

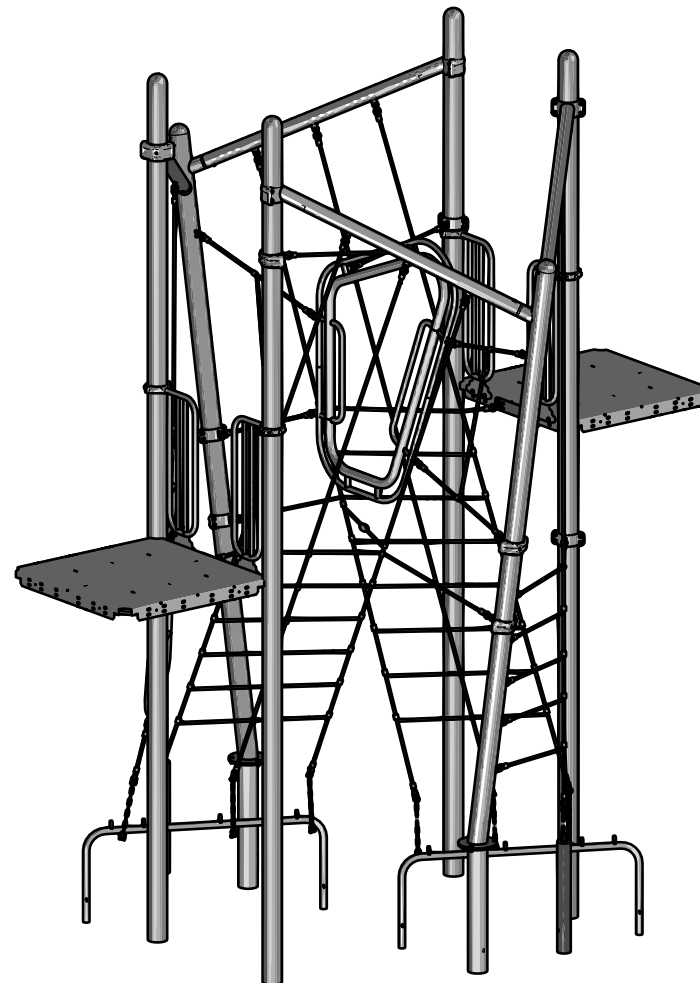
Secure the centerline clamps to the support posts.



Detail Y-2

Step 28

Secure the wide clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare footings as shown in the **Support Post, Component and Surface Mount Footing Details** on pages 4 and 5 of this installation document.

Step 4: Mark support posts. See **Detail A**. Refer to the Elevation View for correct height placement for the post frames on the existing support posts. Mark the support posts at the correct height to assist with attachment of the post frames.

Step 5 (In-ground Mount Only): Attach the climber footing post to the climber post. See **Detail B**. Align the holes on the posts, and attach as shown.

Step 6: Attach the post frame to the designated support post. See **Detail C**. Use the marked support post as a guide, and attach as shown.

Step 7: Attach the post frame to the climber post. See **Detail D**. Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame. Attach as shown.

Step 8: Attach the post frame to the climber post. See **Detail E**. Slide the post frame onto the climber post, and attach as shown.

Step 9: Attach the post frame to the designated support post. See **Detail F**. Use the marked support post as a guide, and attach as shown.

Step 10: Attach the post frame to the designated support post. See **Detail G**. Use the marked support post as a guide, and attach as shown.

Step 11: Attach the post frame to the climber post. See **Detail H**. Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame. Attach as shown.

Step 12: Attach the post frame to the climber post. See **Detail J**. Slide the post frame onto the climber post, and attach as shown.

Step 13: Attach the post frame to the designated support post. See **Detail K**. Use the marked support post as a guide, and attach as shown.

Step 14: Attach the clamps to the gate barriers. See **Detail L**. Place the clamps on the ends of the gate barriers, and attach as shown.

Step 15: Attach the gate barriers to the assembly. See **Details M-1 and M-2**. Close the clamps around the support posts, and attach as shown. Align the holes on the gate barriers with the top set of holes on the decks, and attach as shown.

Step 16: Attach the deck brackets to the decks. See **Detail N**. Position the brackets against the middle set of holes on the decks, and attach as shown.

Step 17: Attach the rope clamps to the posts. See **Detail O**. Position the clamps around the posts, and attach as shown. Refer to page 13 for placement of the clamps.

Important Note: Keep rope clamp connections loose to assist with the installation of the ropes.

Step 18: Attach the ropes to the frames, posts, deck brackets and clamps. See **Detail P**. Insert bushings into the frames / support posts, and attach the ropes as shown.

Step 19: Attach the side ropes to the middle hoop and attach to the assembly. See **Detail Q**. Attach the ropes to the middle hoop as shown and attach to the assembly as shown.

Note: Attach the side ropes to the assembly first.

Step 20: Attach the ropes to the climber frames and attach to the assembly. See **Detail R**. Attach the ropes to the climber frames as shown and attach to the assembly as shown.

Step 21: Attach the remaining ropes to the assembly. See **Detail S**. See pages 17-18 for placement of ropes, attach as shown.

Installation Instructions

Step 22: Attach the middle ropes on the upper and lower deck ropes. See **Detail T**. Place the rope connectors on the ends of the ropes, and attach as shown.

Step 23: Attach the chains to the bottoms of the ropes. See **Detail U**. Place the top link of the chain between the shackle on the rope, and attach as shown.

Step 24: Attach the chains to the footing frames. See **Detail V**. Insert bushings into the tabs on the footing frames. Place the shackle through the lowest chain link that creates tension on the rope, and attach as shown.

Note: On one of the AFR2510 footing frames, you will only need to use 3 bushings. Do not insert a bushing in one of the end tabs (see page 21).

Step 25 (In-ground Mount): Attach the chain to the rope footing post. See **Detail W**. Insert bushings into the tabs on the rope footing post. Place the shackle through the lowest chain link that creates tension on the rope, and attach as shown.

Step 26 (Surface Mount): Attach the chain to the rope footing bracket. See **Detail X**. Insert bushings into the tabs on the rope footing bracket. Place the shackle through the lowest chain link that creates tension on the rope, and attach as shown.

Final Details.

Step 27: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground Mount: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 28: Install drive rivets. See **Details Y-1 and Y-2**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.



CH4707 - CONVERGE IN-GROUND

PART NO.	DESCRIPTION	QTY.	PART NO.	DESCRIPTION	QTY.
AAU0021	CLAMP - 5" WIDE ALUMINUM	4	BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	48
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	3	BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8
AAU0054	CLAMP - 3.50" x 4.50" WIDE ALUMINUM	4	BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	8
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4	BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	7
AAU6223	ROPE CONNECTOR	2	BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	4
ABC1212	BRACKET - 12.00" x 3.00" x 2.56"	2	BAE9077	SHACKLE - "D" STYLE	9
ACN0109	CHAIN - 14.45" x #5/0	9	BAE9078	BOLT - M10 x 1.5 x 40 mm FLAT HEAD	9
AEN0457	BARRIER - 42.07" x 8.00" GATE	4	BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	47
AFM7403	CLAMP - 5.00" O.D. ROPE CONNECTION	4			
AFM9272	CLAMP - 3.50" O.D. WITH TAB	3			
AFR0734	FRAME - 5.00" O.D. x 34.12"	2			
AFR2449	FRAME - 74.82" x 60.03" x 5.44"	1			
AFR2450	FRAME - 31.27" x 25.33" x 1.32"	2			
AFR2506	FRAME - 71.47" x 6.33" x 5.61"	1			
AFR2507	FRAME - 70.75" x 6.33" x 5.61"	1			
AFR2508	FRAME - 70.75" x 6.33" x 5.60"	1			
AFR2509	FRAME - 71.47" x 6.33" x 5.60"	1			
AFR2510	FRAME - 63.66" x 26.63" x 1.66"	2			
AMC1177	ROPE - 44.75" x 16 mm	1			
AMC1178	ROPE - 42.88" x 16 mm	1			
AMC1179	ROPE - 81.77" x 16 mm	1			
AMC1180	ROPE - 66.64" x 16 mm	1			
AMC1181	ROPE - 15.02" x 16 mm	2			
AMC1182	ROPE - 16.94" x 16 mm	1			
AMC1183	ROPE - 24.22" x 16 mm	1			
AMC1184	CONVERGE CLIMBER (LADDER)	1			
AMC1185	CONVERGE CLIMBER (LOWER DECK CH)	1			
AMC1186	CONVERGE CLIMBER (UPPER DECK) CH	1			
AMC1187	CONVERGE CLIMBER (SIDE ROPE) CH	1			
AMC1188	CONVERGE CLIMBER (SIDE ROPE) CH	1			
APT5230	POST - ROPE FOOTING	2			
APT5582	POST - 162.80" x 36.34" x 15.10"	1			
APT5583	POST - 162.80" x 36.34" x 15.09"	1			
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	15			
BAE0112	NUT - 3/8"-16 HEAVY HEX	1			
BAE0595	WASHER - 3/8" SAE FLAT	52			
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	36			
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	18			
BAE0632	NUT - 3/8"-16 x 1.25 BARREL	4			



CH4707S - CONVERGE SURFACE MOUNT

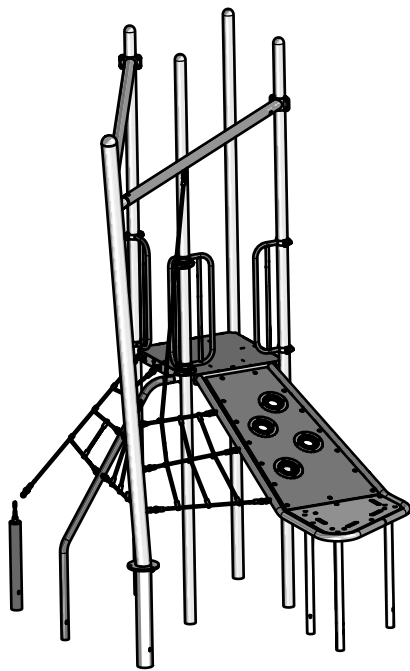
PART NO.	DESCRIPTION	QTY.	PART NO.	DESCRIPTION	QTY.
AAU0021	CLAMP - 5" WIDE ALUMINUM	4	BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	48
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	3	BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8
AAU0054	CLAMP - 3.50" x 4.50" WIDE ALUMINUM	4	BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	8
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4	BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	1
AAU6223	ROPE CONNECTOR	2	BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	4
ABC0516	BRACKET - SINGLE ROPE ATTACHMENT	2	BAE9077	SHACKLE - "D" STYLE	9
ABC1212	BRACKET - 12.00" x 3.00" x 2.56"	2	BAE9078	BOLT - M10 x 1.5 x 40 mm FLAT HEAD	9
ABC1213	FRAME - 54.00" x 2.50" x 2.44"	1	BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	47
ABC1214	FRAME - 48.00" x 2.50" x 2.44"	1			
ACN0109	CHAIN - 14.45" x #5/0	9			
AEN0457	BARRIER - 42.07" x 8.00" GATE	4			
AFM7403	CLAMP - 5.00" O.D. ROPE CONNECTION	4			
AFM9272	CLAMP - 3.50" O.D. WITH TAB	3			
AFR2449	FRAME - 74.82" x 60.03" x 5.44"	1			
AFR2450	FRAME - 31.27" x 25.33" x 1.32"	2			
AFR2506	FRAME - 71.47" x 6.33" x 5.61"	1			
AFR2507	FRAME - 70.75" x 6.33" x 5.61"	1			
AFR2508	FRAME - 70.75" x 6.33" x 5.60"	1			
AFR2509	FRAME - 71.47" x 6.33" x 5.60"	1			
AMC1177	ROPE - 44.75" x 16 mm	1			
AMC1178	ROPE - 42.88" x 16 mm	1			
AMC1179	ROPE - 81.77" x 16 mm	1			
AMC1180	ROPE - 66.64" x 16 mm	1			
AMC1181	ROPE - 15.02" x 16 mm	2			
AMC1182	ROPE - 16.94" x 16 mm	1			
AMC1183	ROPE - 24.22" x 16 mm	1			
AMC1184	CONVERGE CLIMBER (LADDER)	1			
AMC1185	CONVERGE CLIMBER (LOWER DECK CH)	1			
AMC1186	CONVERGE CLIMBER (UPPER DECK) CH	1			
AMC1187	CONVERGE CLIMBER (SIDE ROPE) CH	1			
AMC1188	CONVERGE CLIMBER (SIDE ROPE) CH	1			
APT5582	POST - 162.80" x 36.34" x 15.10"	1			
APT5583	POST - 162.80" x 36.34" x 15.09"	1			
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	15			
BAE0112	NUT - 3/8"-16 HEAVY HEX	1			
BAE0595	WASHER - 3/8" SAE FLAT	52			
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	24			
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12			
BAE0632	NUT - 3/8"-16 x 1.25 BARREL	4			



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH4708 and CH4708S








Round-the-Corner

In-ground and Surface Mount

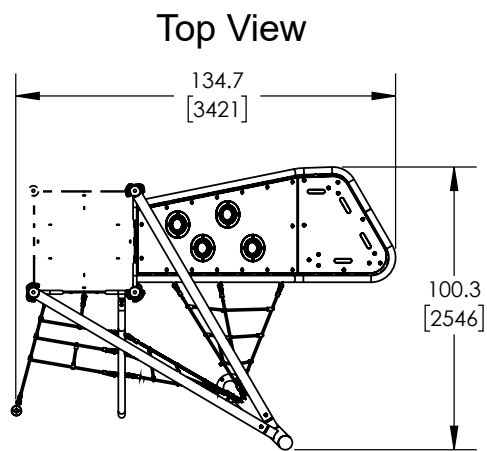
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time (In-Ground): 5 man-hours
 Installation Time (Surface Mount): 2 man-hours
 Concrete Required: 0.47 cubic yard (0,35 cubic meters)
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

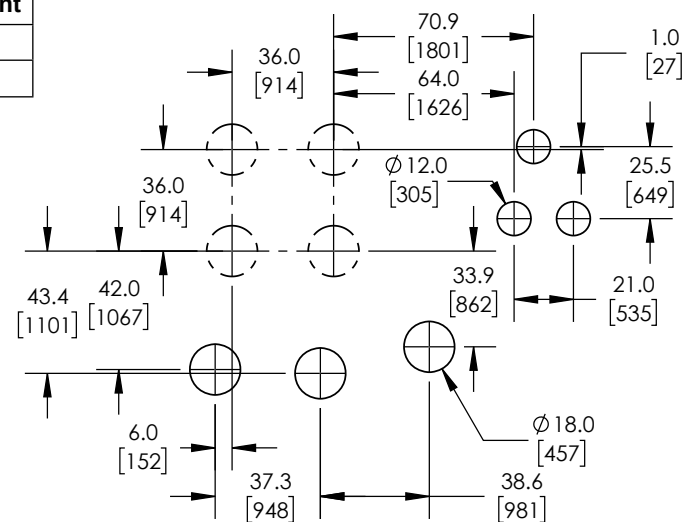
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

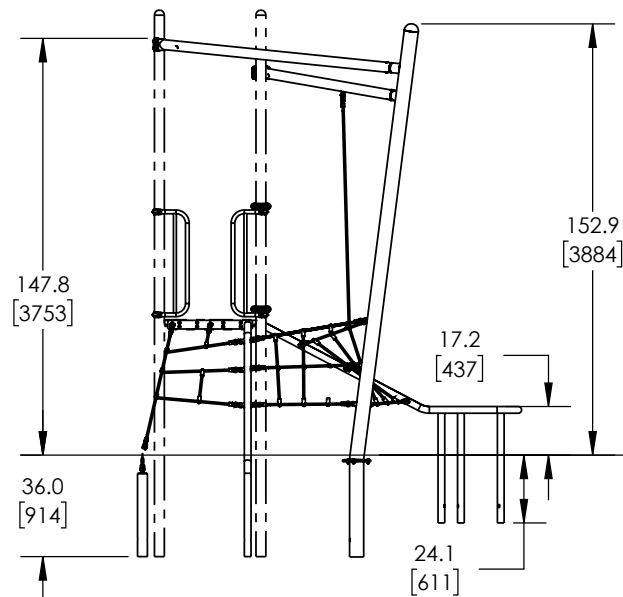
Installation Instructions



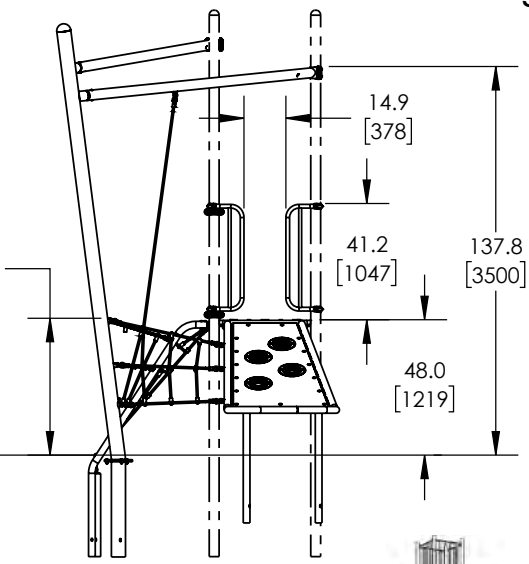
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



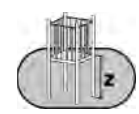
Footing Diagram



SURFACING LEVEL



Elevation Views
CH4708

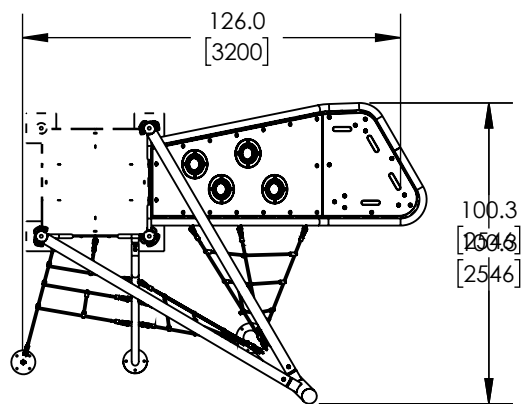


ASTM F1487: 49" (1244 mm)
CSA-Z614: 1244 mm
EN1176: 1244 mm

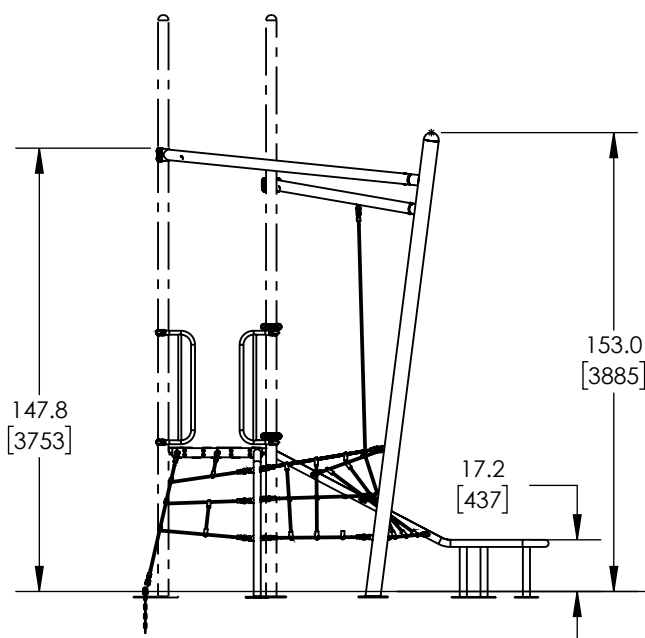
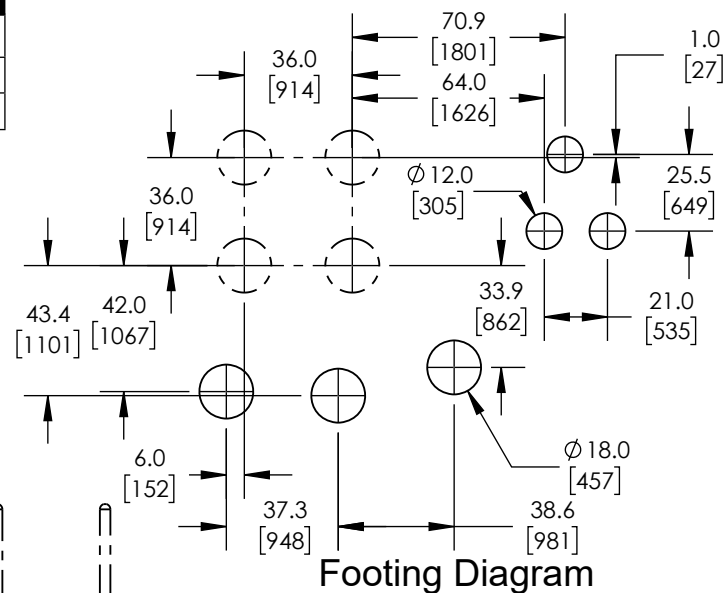


Installation Instructions

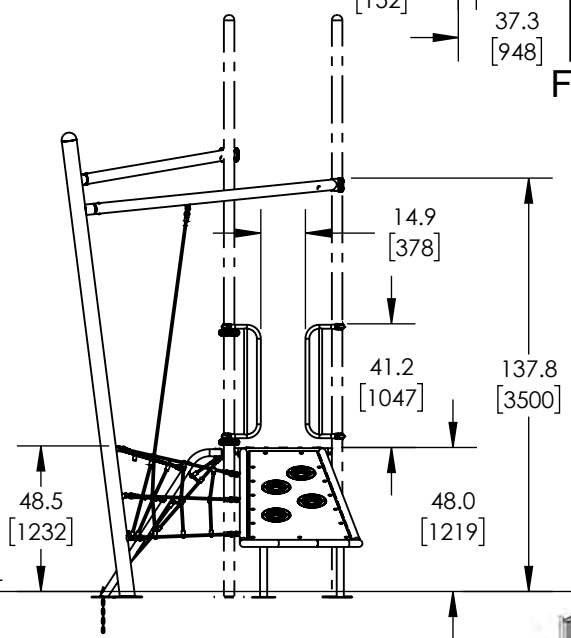
Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



SURFACING LEVEL

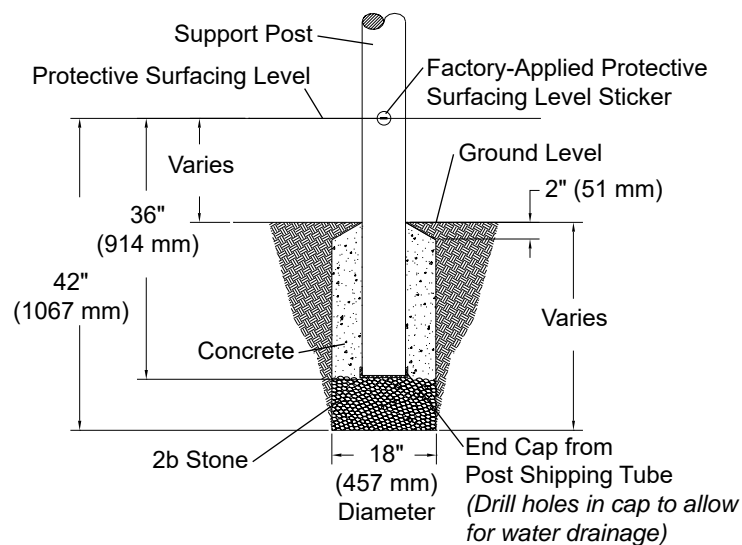


Elevation Views
CH4708S

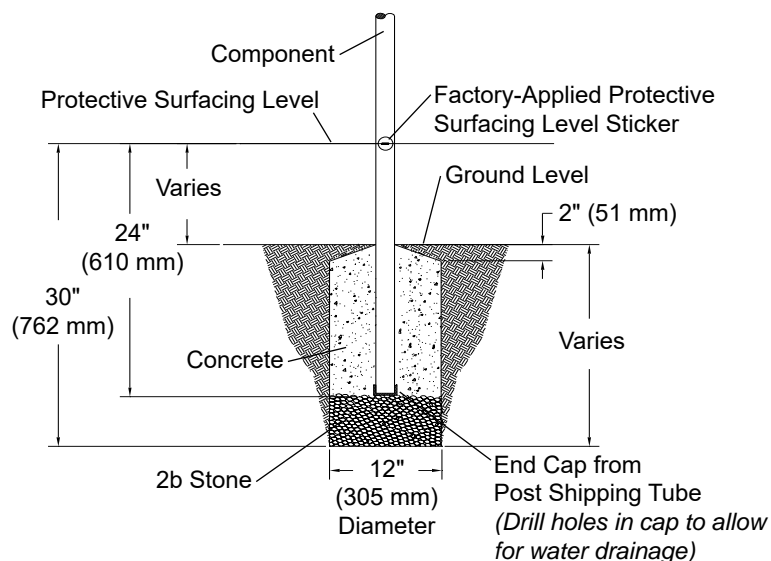


ASTM F1487: 49" (1244 mm)
CSA-Z614: 1244 mm
EN1176: 1244 mm

Installation Instructions



Support Post Footing Detail (ASTM/CSA)



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

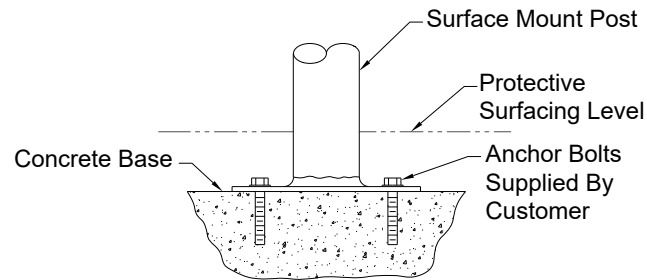
For example:

- If local soil is loose or unstable, a larger footing may be required.
- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

FOOTING NOTES

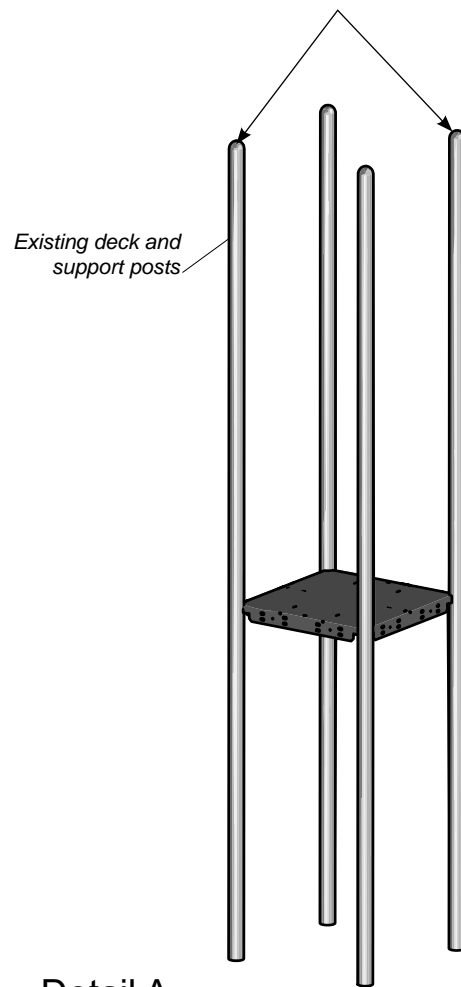
- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in Handbook for Public Playground Safety published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

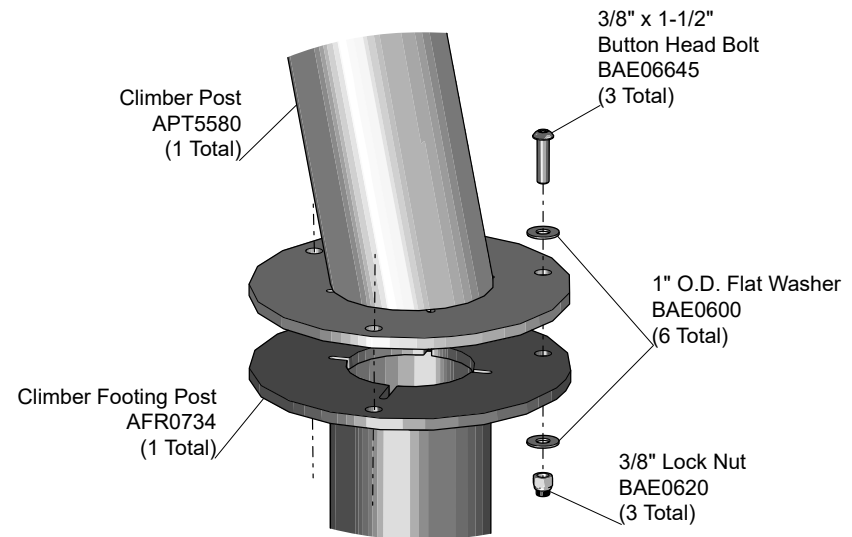
Installation Instructions


Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 21.

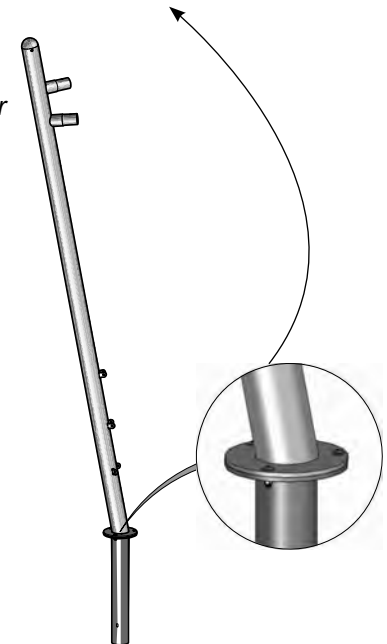
Note: Refer to the Elevation View for correct height placement for the post frames on the support posts. Mark the support posts at the correct height to assist with attachment of post frames.



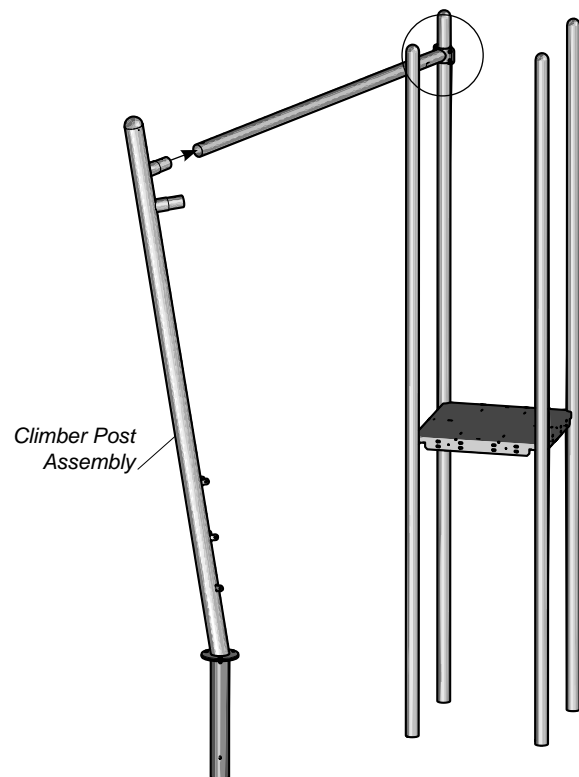
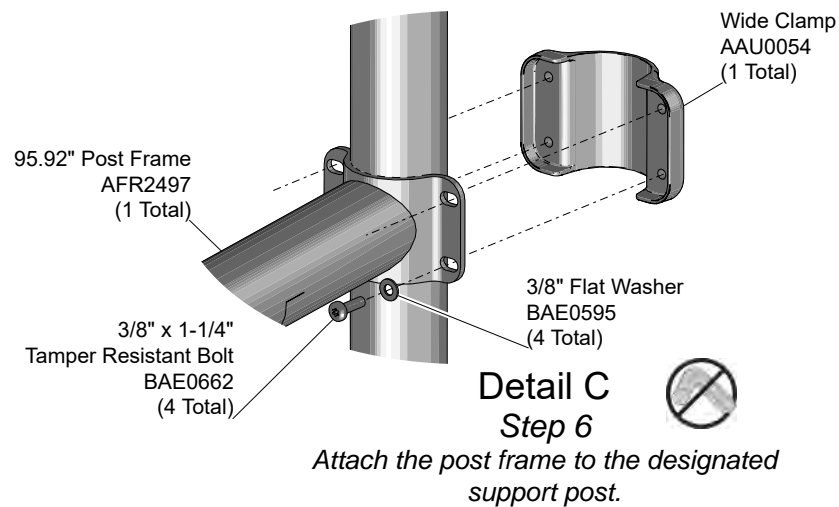
Detail A
Step 4
Mark support posts.



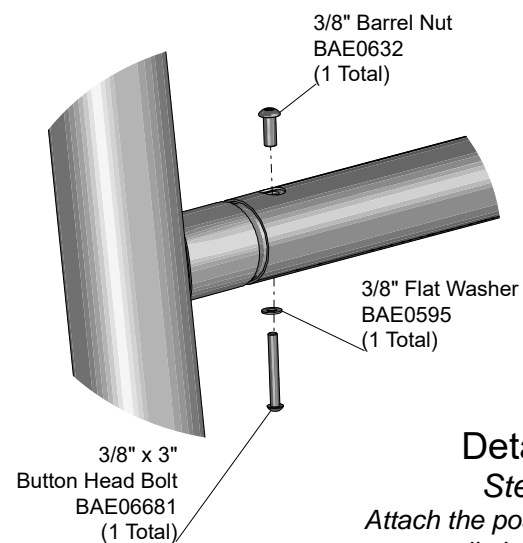
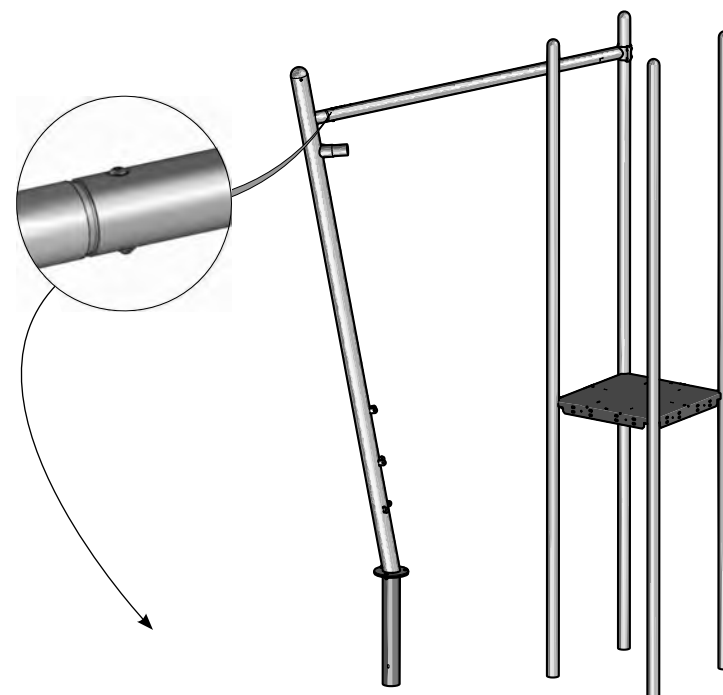
 **Detail B**
Step 5
(In-ground Mount Only)
Attach the climber footing post to the climber post.



Installation Instructions



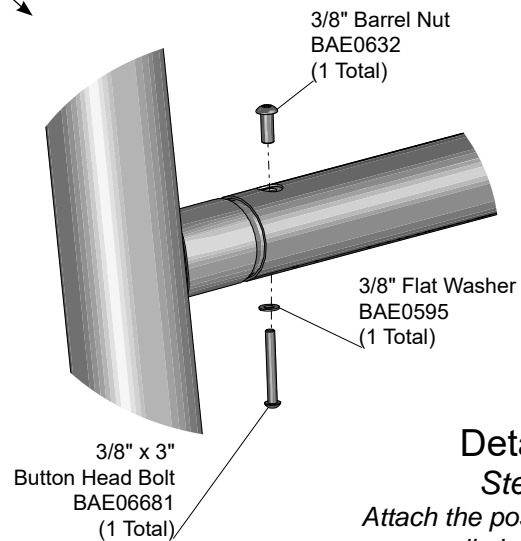
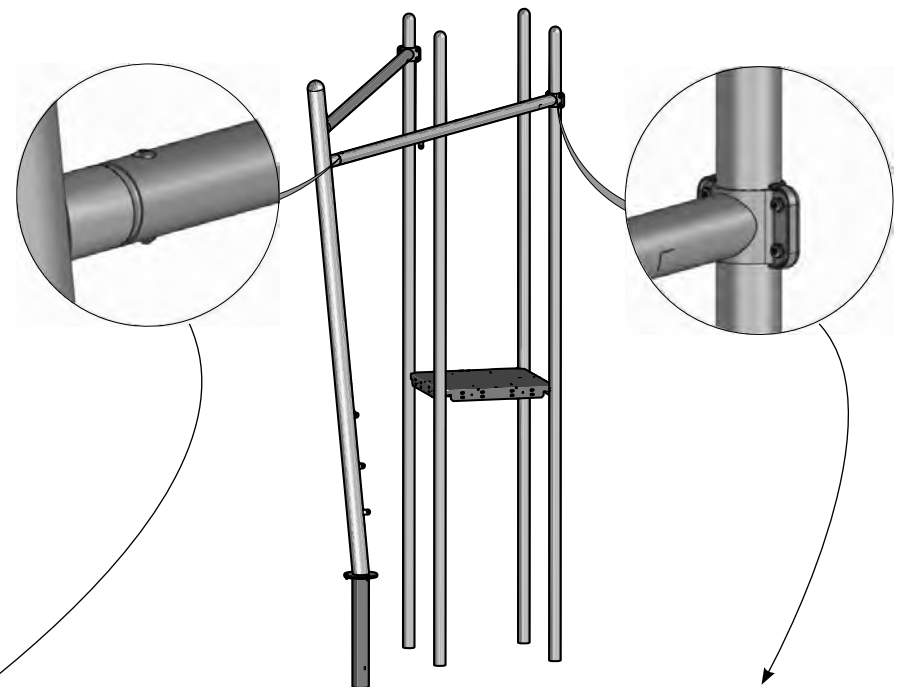
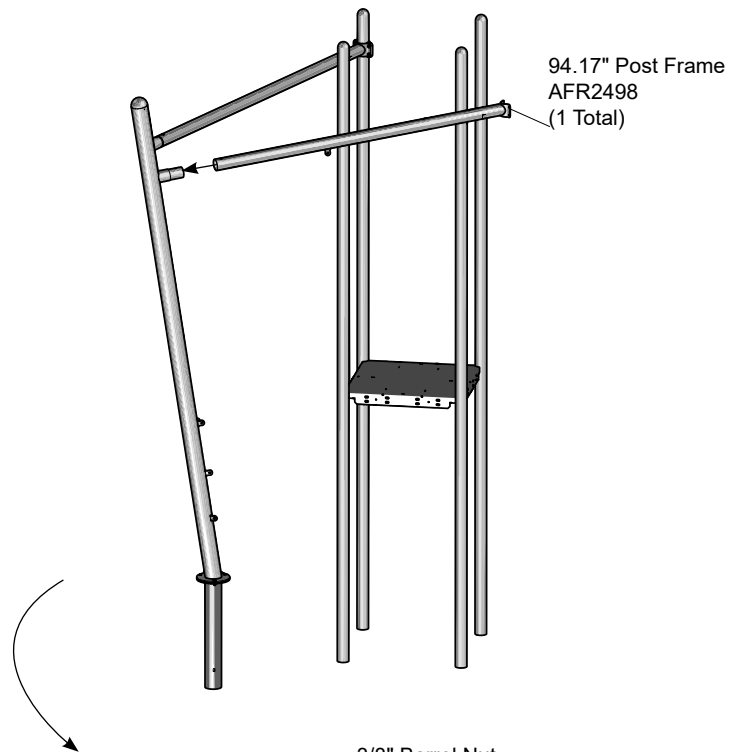
Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame.



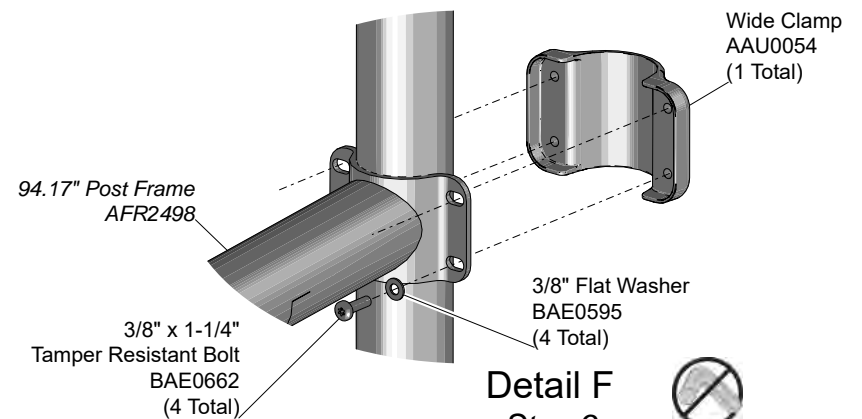
Detail D
Step 7

Attach the post frame to the climber post.

Installation Instructions



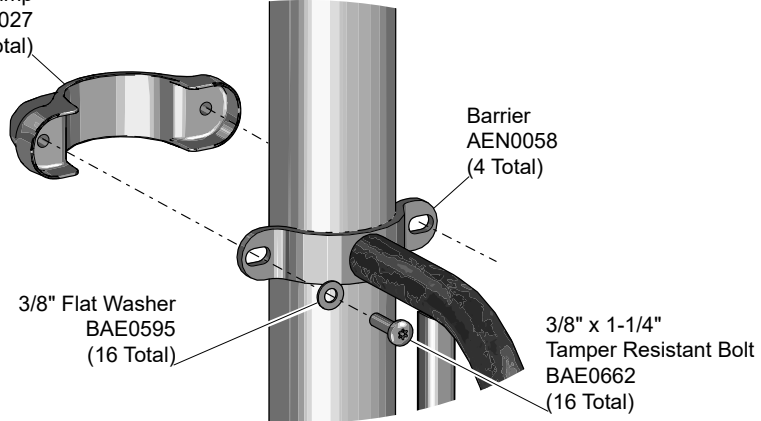
Detail E
Step 8
*Attach the post frame to the
climber post.*



Detail F
Step 9
*Attach the post frame to the designated
support post.*

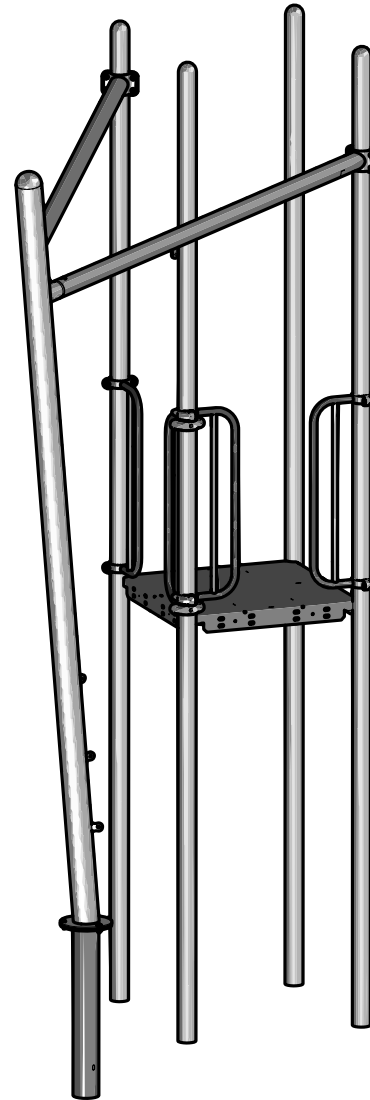
Installation Instructions

Narrow Band Clamp
AAU0027
(8 Total)

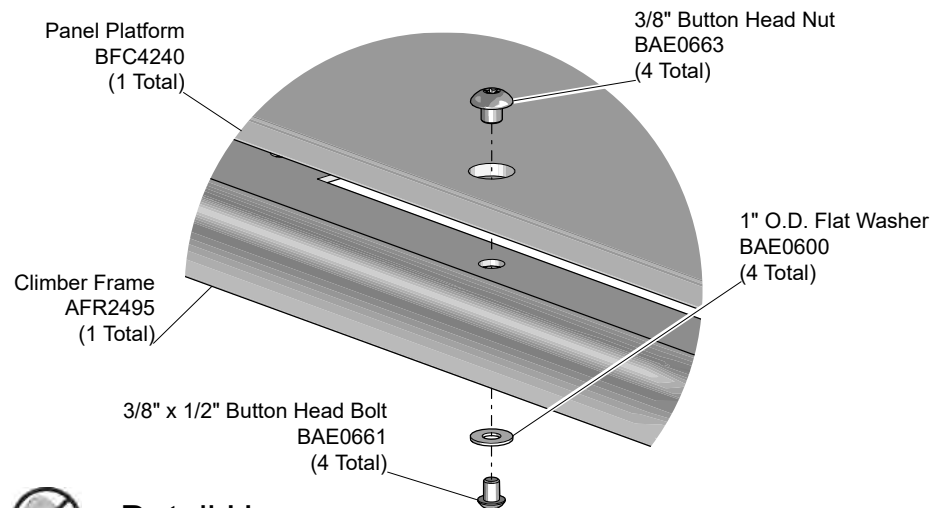


Detail G
Step 10

Attach the barriers to the support posts.

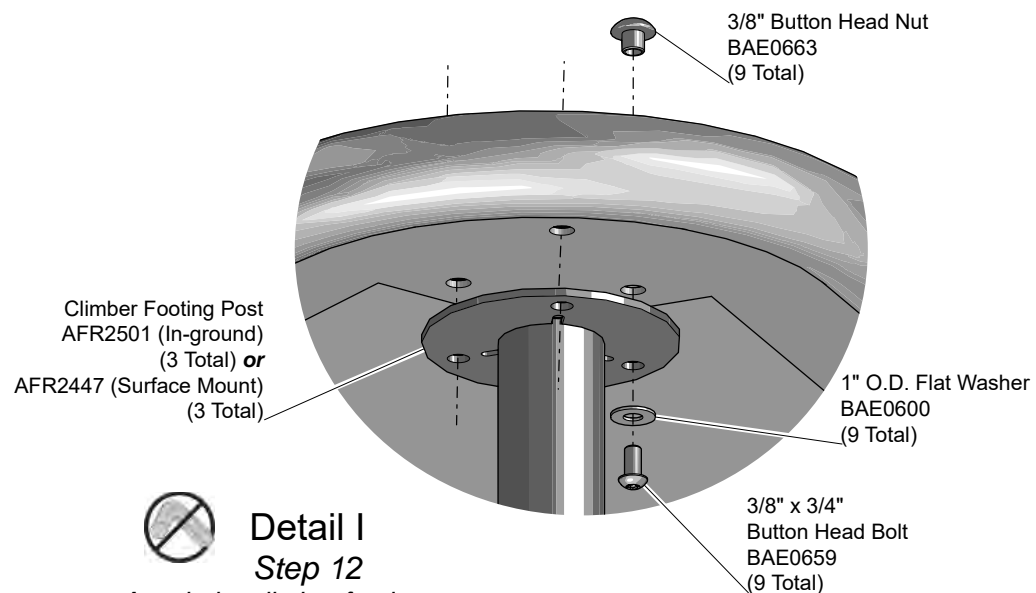
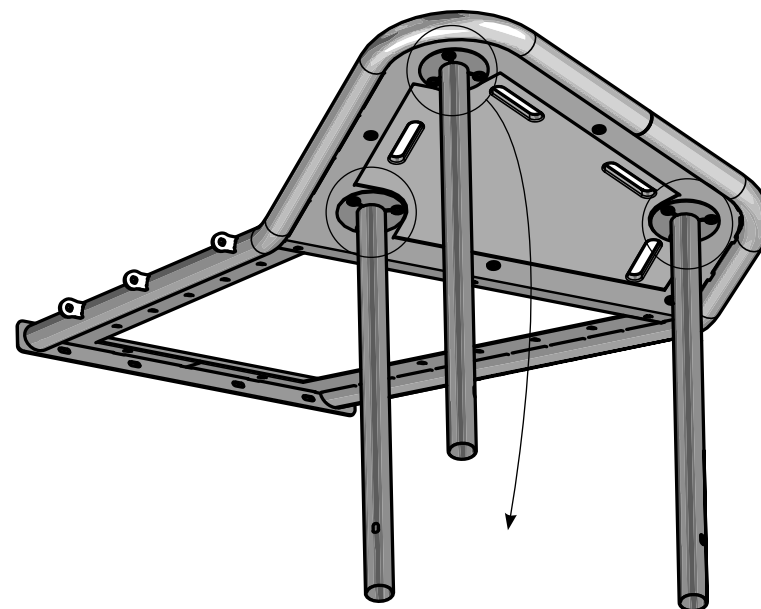
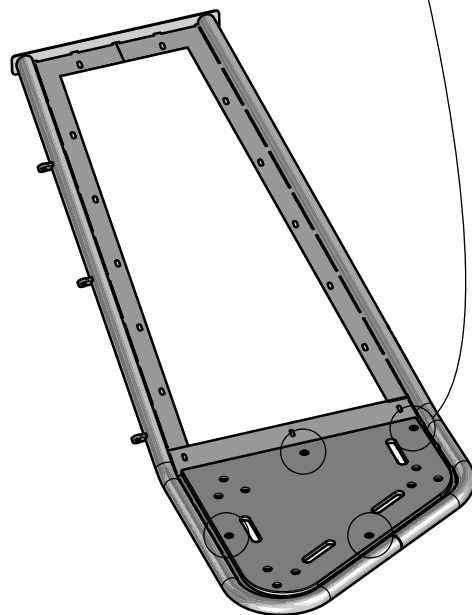


Installation Instructions



Detail H Step 11

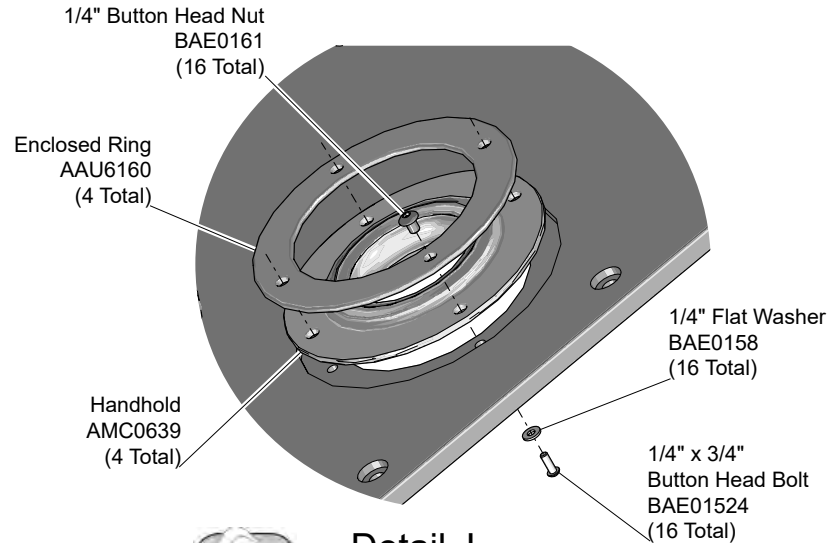
Attach the panel platform to the climber frame.



Detail I Step 12

Attach the climber footing posts to the climber frame.

Installation Instructions

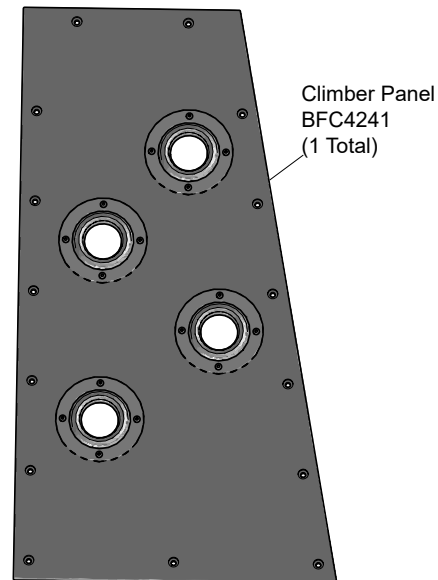


Detail J Step 13

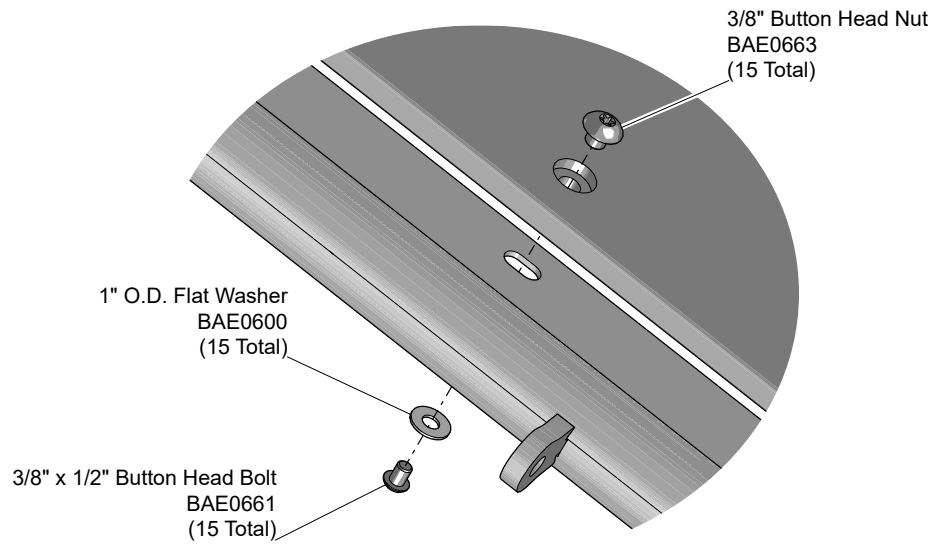
Attach the handholds to the climber panel.



Note: The thicker side of the handhold (AMC0639) is inserted through the climber panel. The thinner side is the side that the enclosed ring will fit against.

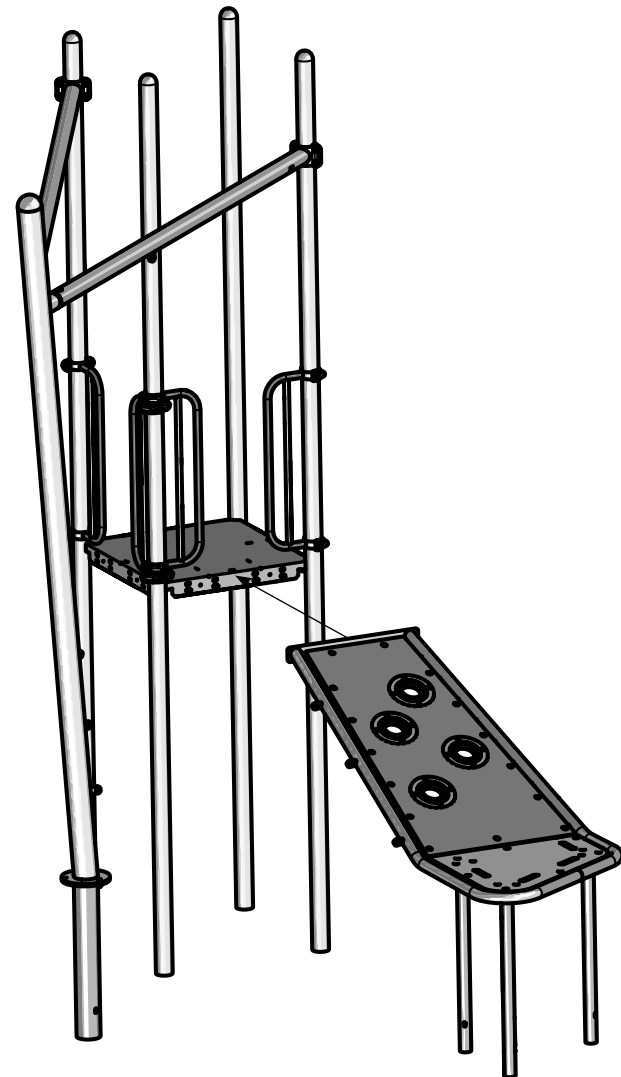
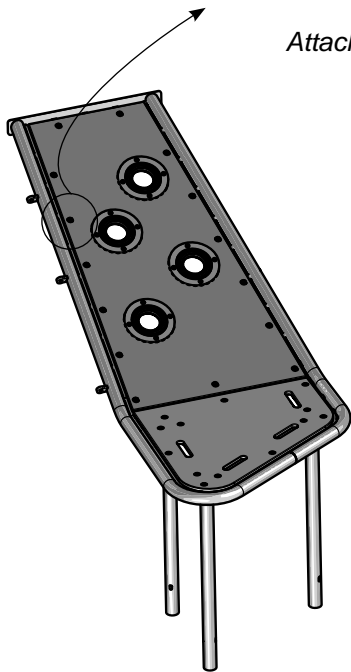


Installation Instructions

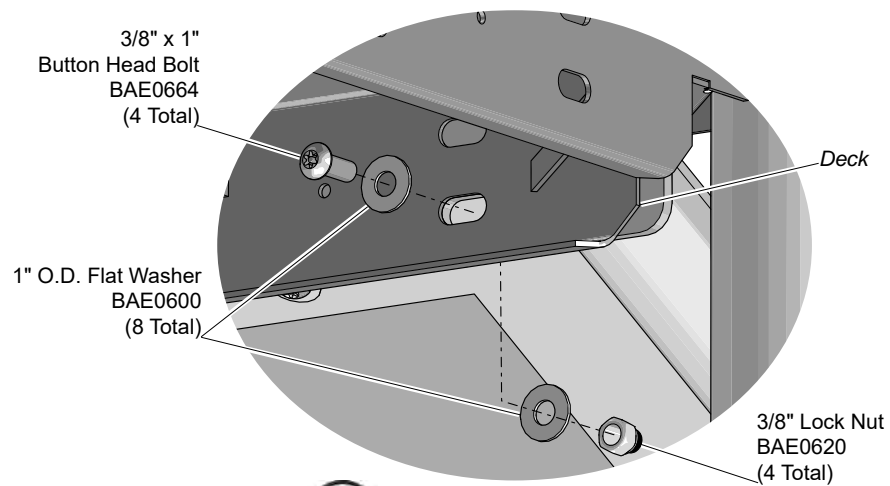


Detail K Step 14

Attach the climber panel to the climber frame.

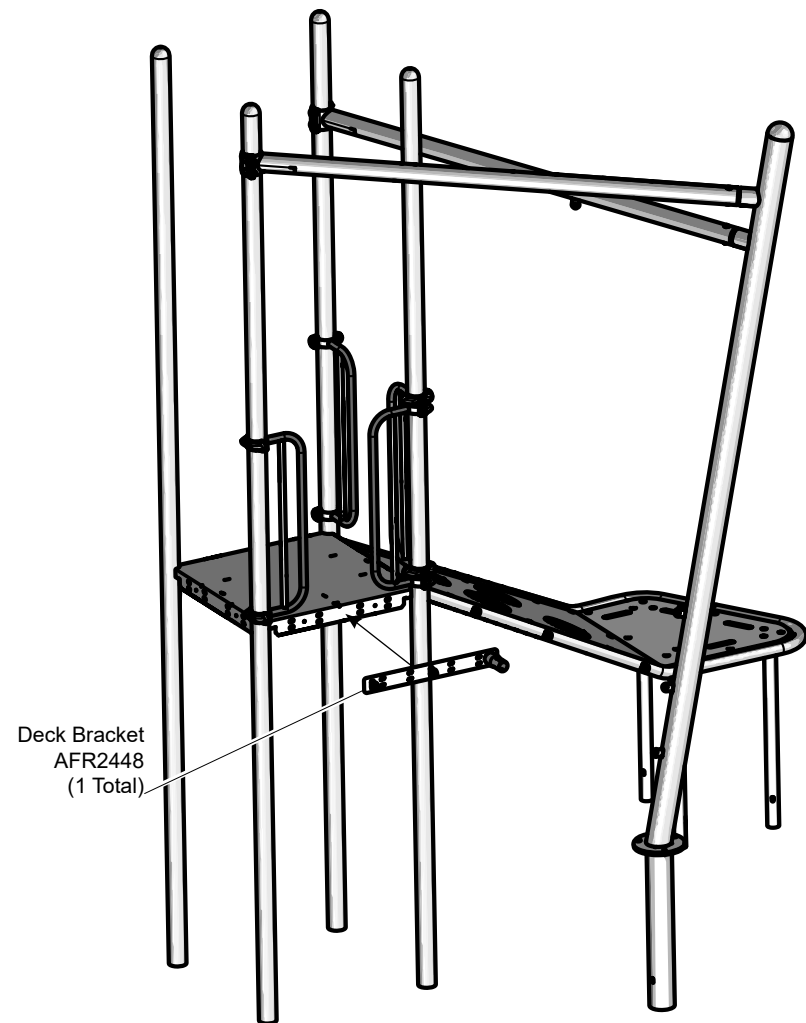
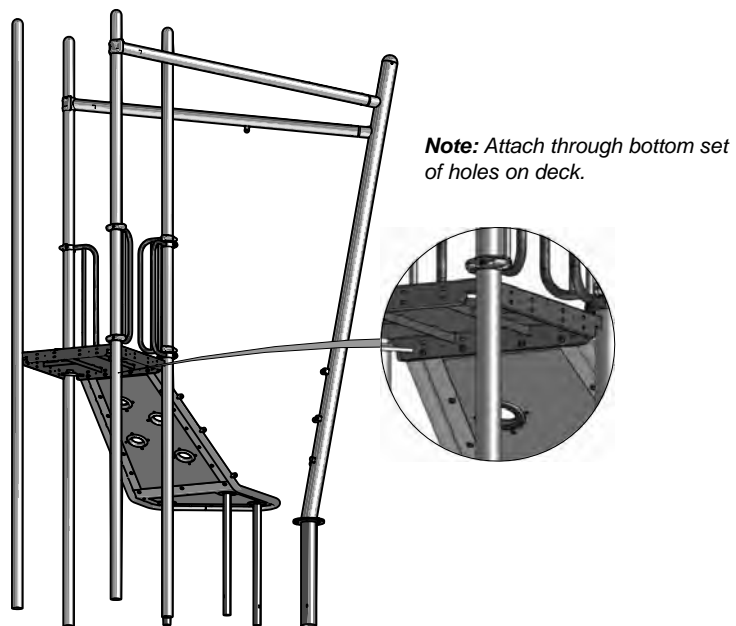


Installation Instructions

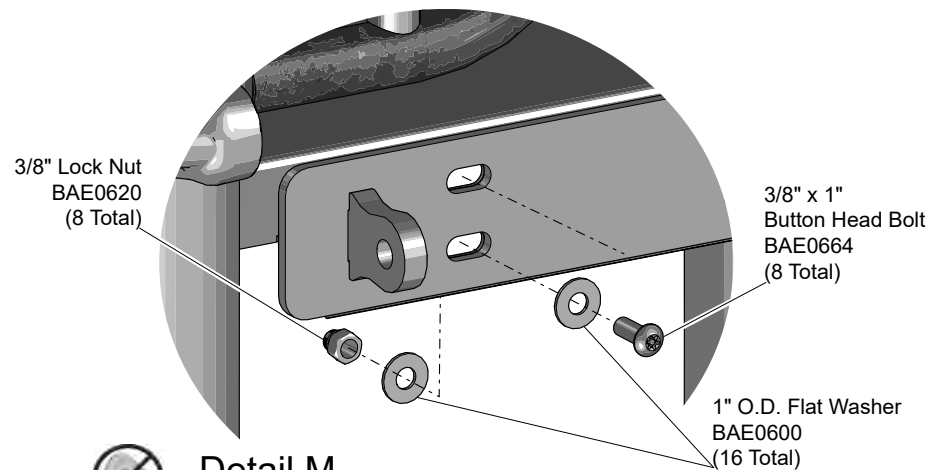


Detail L Step 15

Attach the climber frame to the deck.

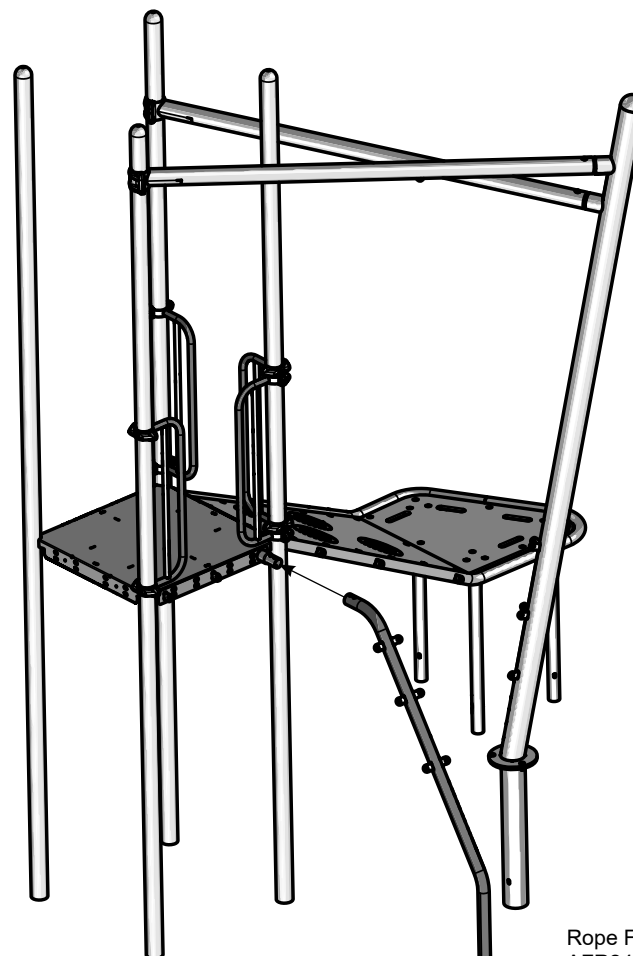
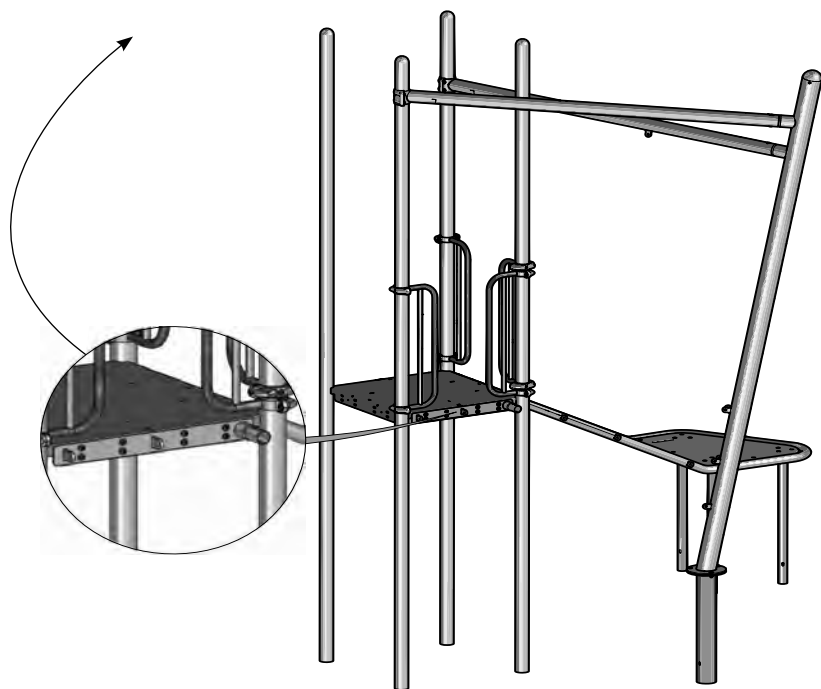


Installation Instructions



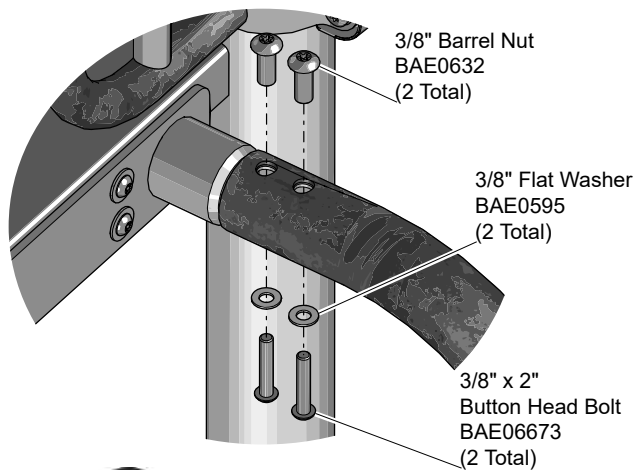
Detail M Step 16

Attach the deck bracket to the deck.



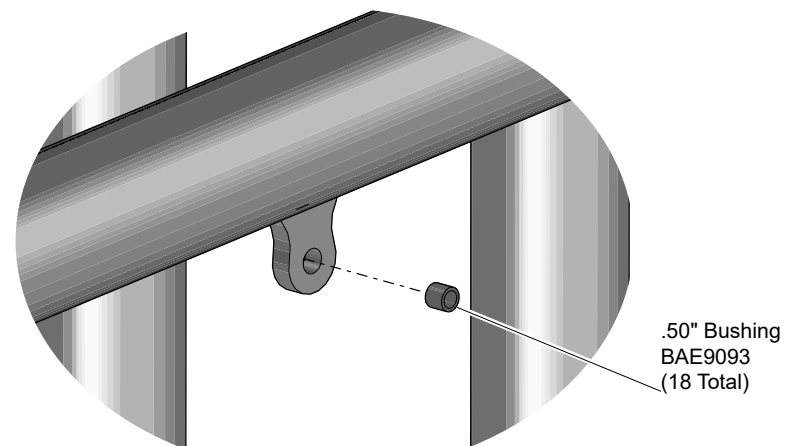
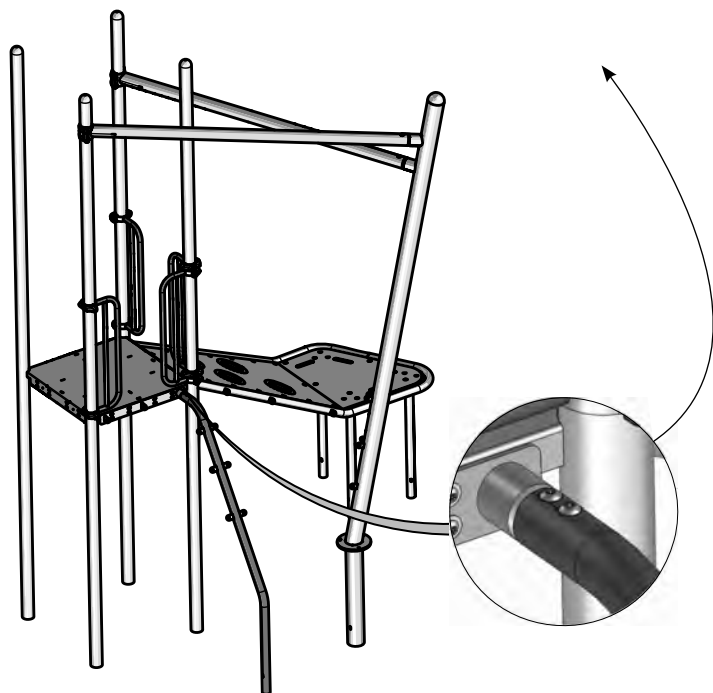
Rope Frame
AFR2496 (In-ground)
(1 Total) **or**
AFR2493 (Surface Mount)
(1 Total)

Installation Instructions



Detail N
Step 17

Attach the rope frame to the deck bracket.

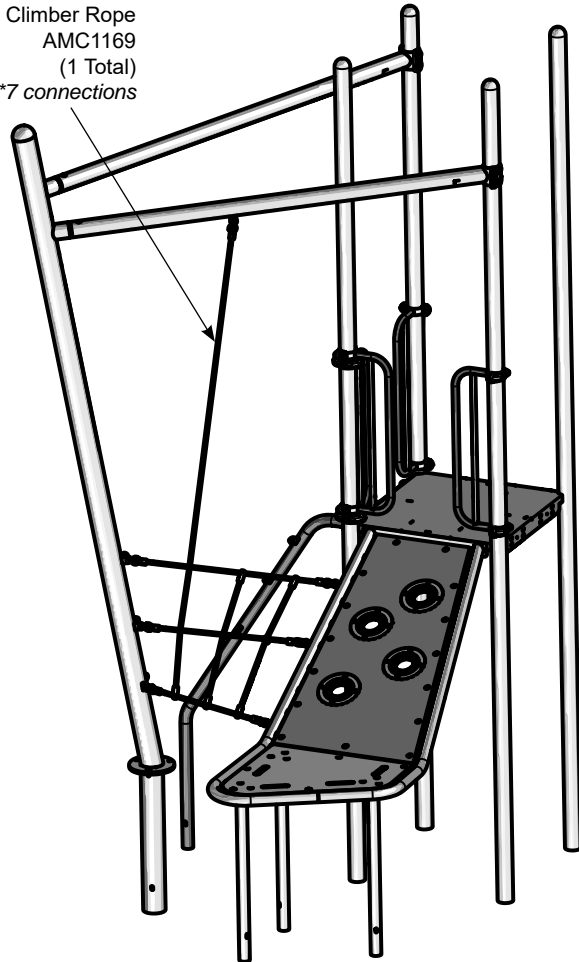


Detail O
Step 18

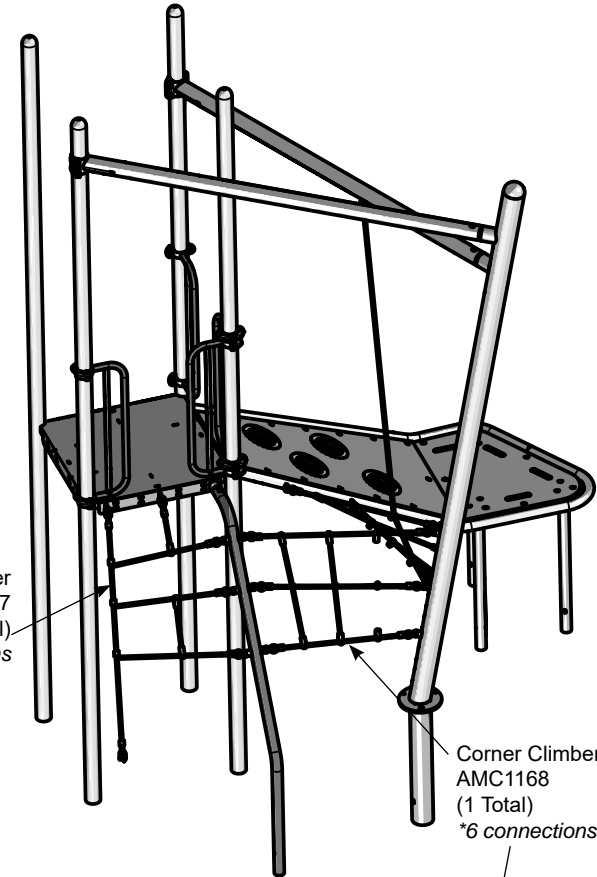
Insert bushings in all tabs.

Installation Instructions

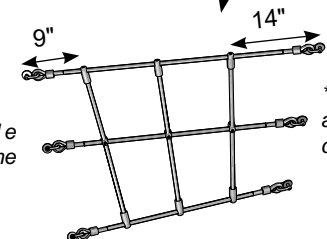
Climber Rope
AMC1169
(1 Total)
*7 connections



Rope Ladder
AMC1167
(1 Total)
*5 connections



Corner Climber Rope
AMC1168
(1 Total)
*6 connections

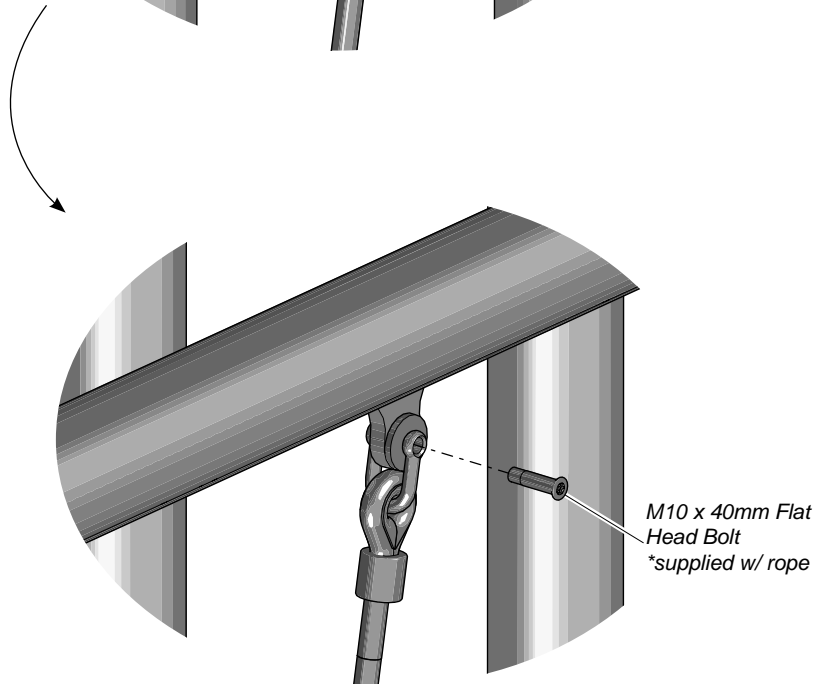
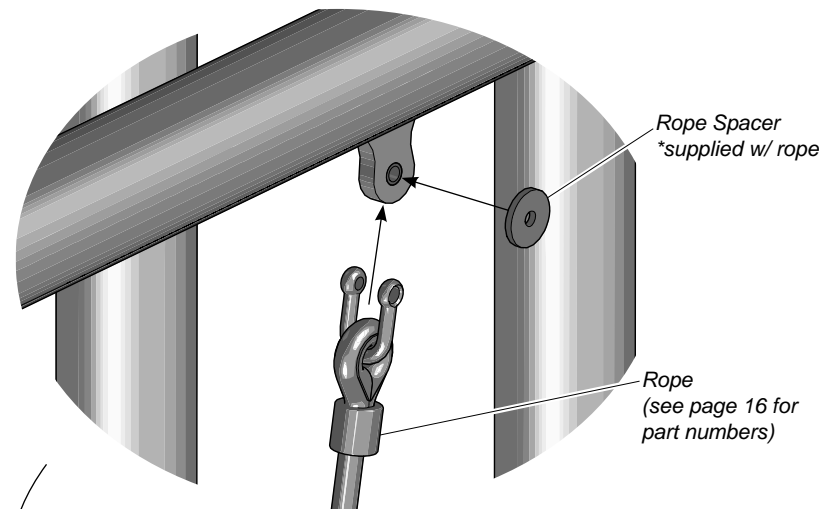


*this side
attaches to the
rope frame

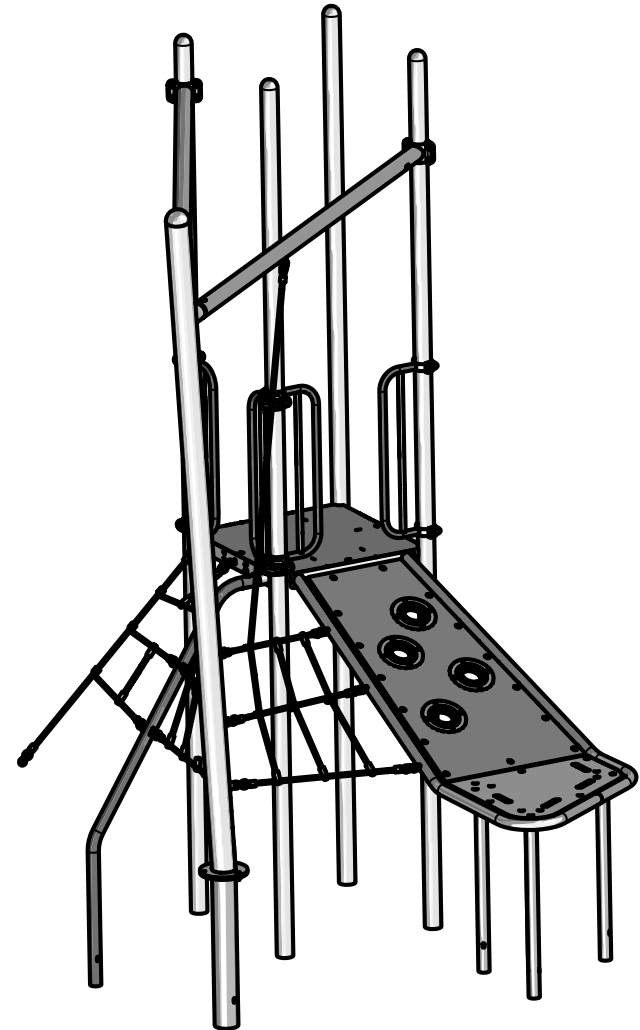
*this side
attaches to the
climber post

Rope Layout

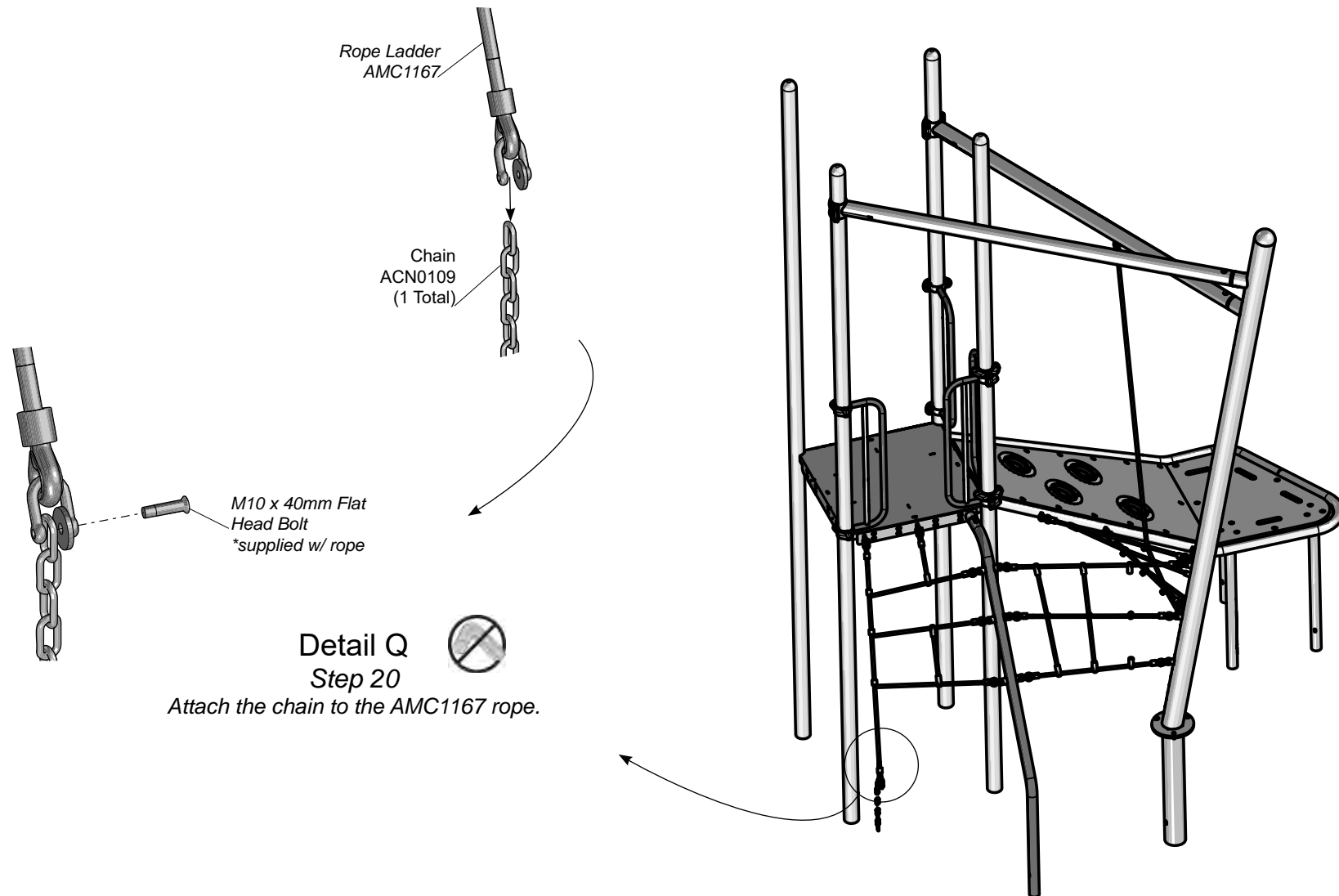
Installation Instructions



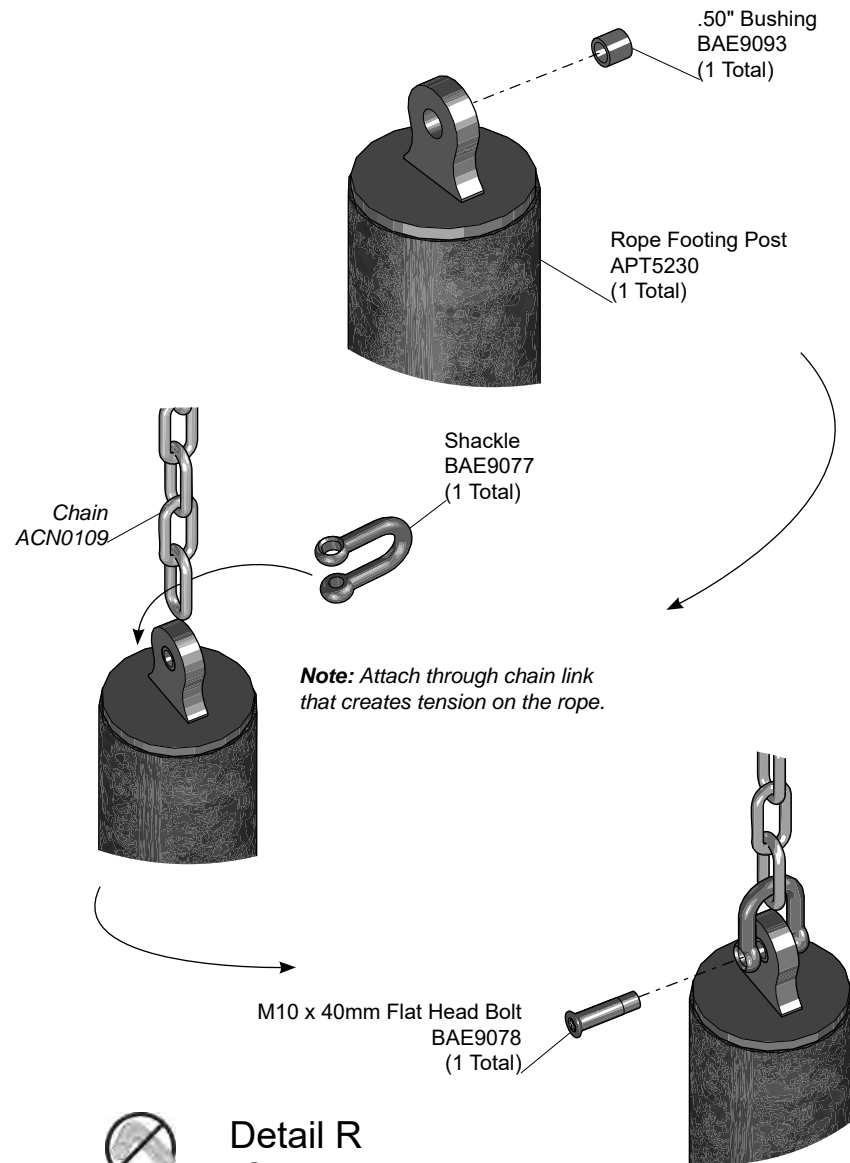
Detail P
Step 19
Attach the ropes.



Installation Instructions



Installation Instructions

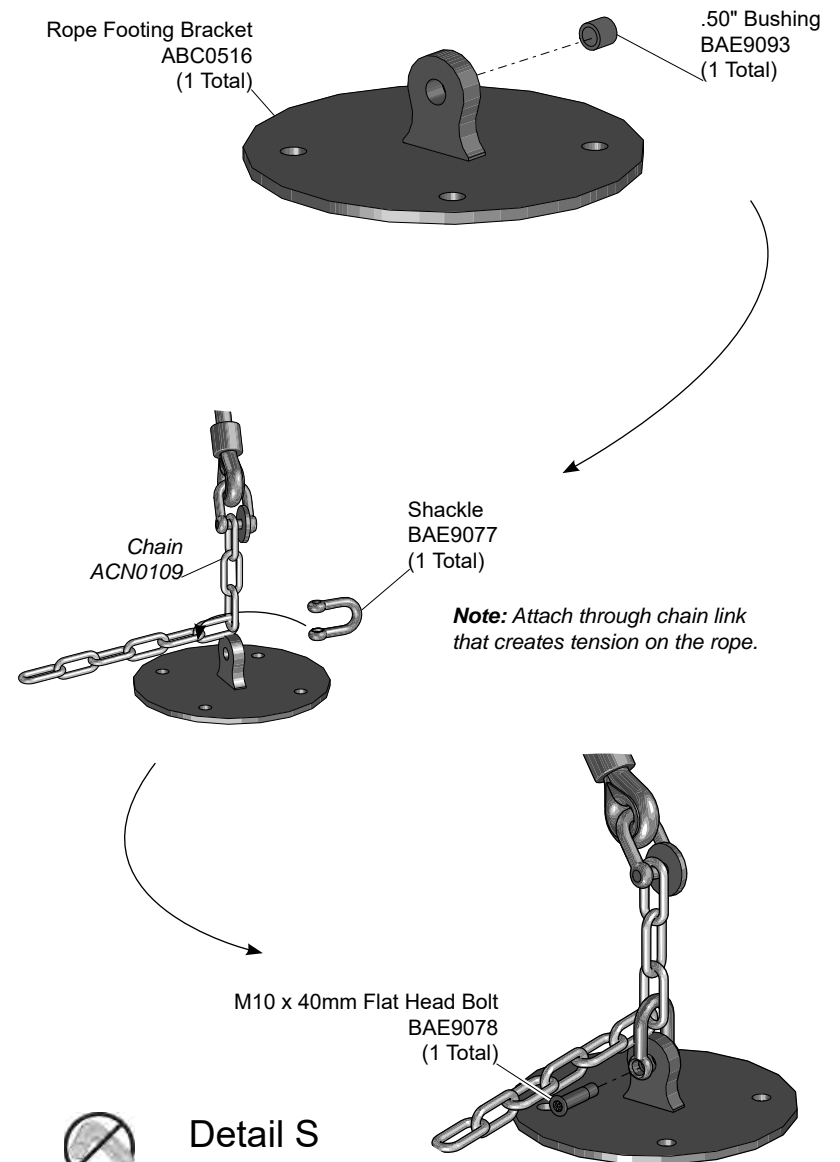


Detail R

Step 21

(In-ground Mount)

Attach the chain to the rope footing post.



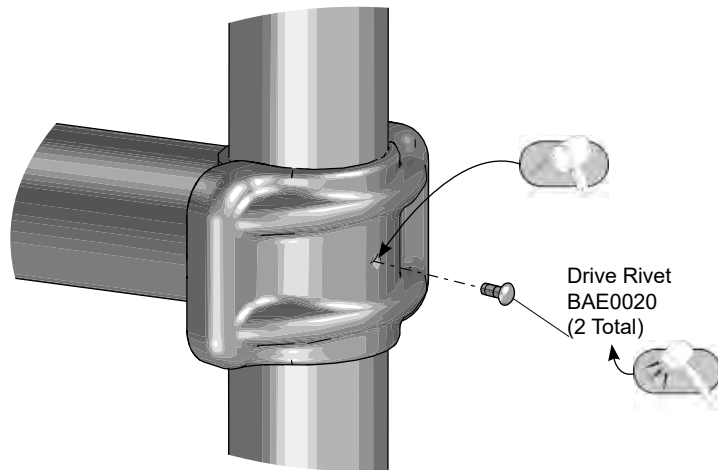
Detail S

Step 22

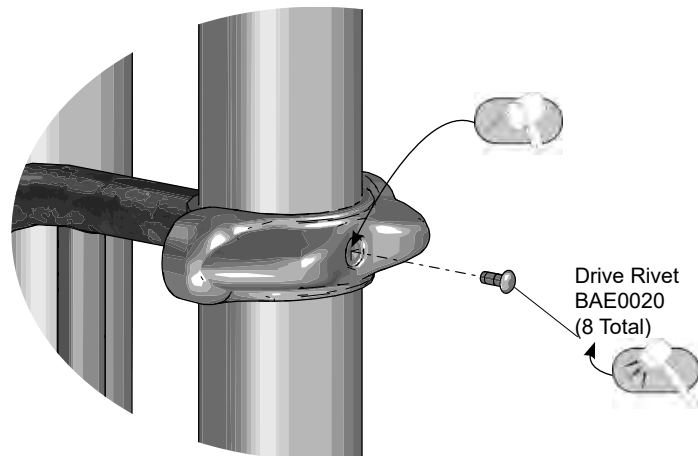
(Surface Mount)

Attach the chain to the rope footing bracket.

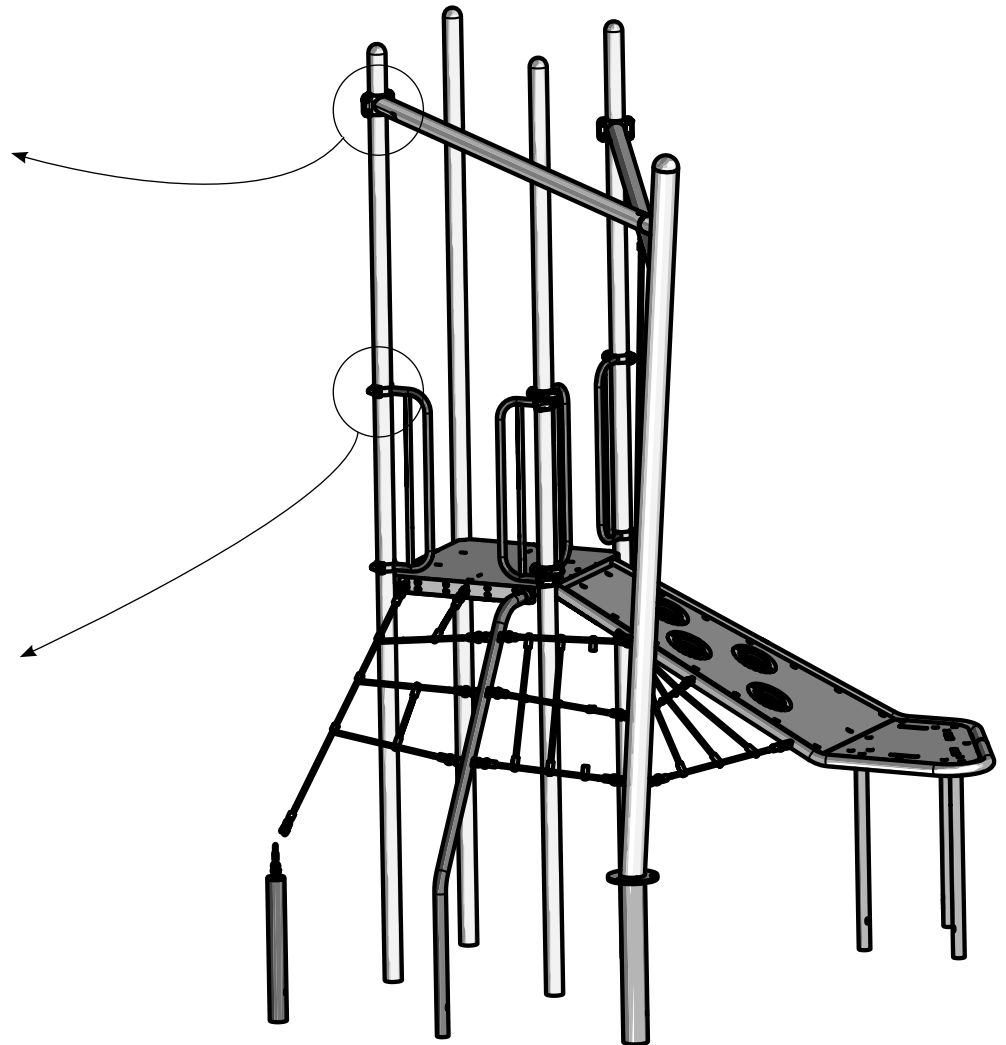
Installation Instructions



Detail T-1
Step 24
Secure the wide clamps to the support posts.



Detail T-2
Step 24
Secure the narrow band clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare footings as shown in the **Support Post, Component and Surface Mount Footing Details** on pages 4 and 5 of this installation document.

Step 4: Mark support posts. See **Detail A**. Refer to the Elevation View for correct height placement for the post frames on the existing support posts. Mark the support posts at the correct height to assist with attachment of the post frames.

Step 5 (In-ground Mount Only): Attach the climber footing post to the climber post. See **Detail B**. Align the holes on the posts, and attach as shown.

Step 6: Attach the post frame to the designated support post. See **Detail C**. Use the marked support post as a guide, and attach as shown.

Step 7: Attach the post frame to the climber post. See **Detail D**. Place the climber post assembly in or on its footing and slide the climber post assembly onto the end of the post frame. Attach as shown.

Step 8: Attach the post frame to the climber post. See **Detail E**. Slide the post frame onto the climber post, and attach as shown.

Step 9: Attach the post frame to the designated support post. See **Detail F**. Use the marked support post as a guide, and attach as shown.

Step 10: Attach the barriers to the support posts. See **Detail G**. Position the barriers between the support posts, and attach as shown.

Step 11: Attach the panel platform to the climber frame. See **Detail H**. Place the panel platform onto the climber frame, align holes, and attach as shown.

Step 12: Attach the climber footing post to the climber frame. See **Detail I**. Place the footing posts under the climber frame, align the holes, and attach as shown.

Step 13: Attach the handholds to the climber panel. See **Detail J**. Position the handholds against the climber panel, and attach as shown.

Step 14: Attach the climber panel to the climber frame. See **Detail K**. Lower the climber panel onto the climber frame, align the holes, and attach as shown.

Step 15: Attach the climber frame to the deck. See **Detail L**. Place the climber frame against the existing deck, and attach through the lower set of holes on the deck as shown.

Step 16: Attach the deck bracket to the deck. See **Detail M**. Place the deck bracket against the side of the deck, and attach as shown.

Step 17: Attach the rope frame to the deck bracket. See **Detail N**. Insert the rope frame into the deck bracket, and attach as shown.

Step 18: Insert bushings in all tabs. See **Detail O**. Insert bushing into all tabs on equipment as shown.

Step 19: Attach the ropes. See **Detail P and Rope Layout**. Attach as shown.

Step 20: Attach the chain to the AMC1167 rope. See **Detail Q**. Place the top chain link between the end of the rope, and attach as shown.

Step 21 (In-ground Mount Only): Attach the chain to the rope footing post. See **Detail R**. Insert bushing into the tab on the rope footing post. Attach the chain through the lowest chain link that creates tension on the rope, and attach as shown.

Step 22 (Surface Mount Only): Attach the chain to the rope footing post. See **Detail S**. Insert bushing into the tab on the rope footing post. Attach the chain through the lowest chain link that creates tension on the rope, and attach as shown.



Installation Instructions

Final Details.

Step 23: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-ground Mount: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 24: Install drive rivets. See **Details T-1 and T-2**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

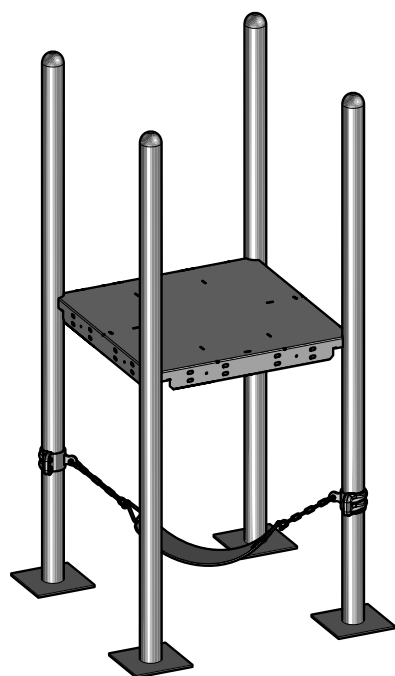


CH4708 - ROUND-THE-CORNER IN-GROUND

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	8
AAU0054	CLAMP - 3.50" x 4.50" WIDE ALUMINUM	2
AAU6160	RING - 9.50" O.D. x .25" FLAT	4
ACN0109	CHAIN - 14.45" x # 5/0	1
AEN0058	BARRIER - 10.44" x 6.38" x 37.94"	4
AFR0734	FRAME - 5.00" O.D. x 34.12"	1
AFR2448	FRAME -3.07" x 5.50" x 30.00"	1
AFR2495	FRAME - 32.88" x 42.73" x 92.33"	1
AFR2496	FRAME - 6.50" x 20.23" x 92.88"	1
AFR2497	FRAME - 4.15" x 6.33" x 95.92"	1
AFR2498	FRAME - 5.80" x 6.33" x 94.17"	1
AFR2501	FRAME -5.75" O.D. x 40.01"	3
AMC0639	NEW CLASSIC HANDHOLD	4
AMC1167	ROPE - LADDER	1
AMC1168	CORNER CLIMBER - ROPE	1
AMC1169	ROPE - CORNER CLIMBER	1
APT5230	POST - ROPE FOOTING	1
APT5580	POST - 10.00" x 15.13" x 158.17 (CH CLIMBER)	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	10
BAE0158	WASHER - 1/4" SAE FLAT	16
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	16
BAE0595	WASHER - 3/8" SAE FLAT	28
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	58
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	15
BAE0632	NUT - 3/8"-16 x 1.25 BARREL	4
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	9
BAE0661	BOLT - 3/8"-16 x .50" BUTTON HEAD - SS	19
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	24
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	28
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	12
BAE01524	BOLT - 1/4"-20 x .75" BUTTON HEAD - SS	16
BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	3
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	2
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	2
BAE9077	SHACKLE - "D" STYLE	1
BAE9078	BOLT - M10 x 1.5 x 40 mm FLAT HEAD	1
BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	19
BFC4240	SHEET PLASTIC - .75" x 31.47" x 34.51"	1
BFC4241	SHEET PLASTIC - .75" x 34.80" x 64.08"	1

CH4708S - ROUND-THE-CORNER SURFACE MOUNT

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	8
AAU0054	CLAMP - 3.50" x 4.50" WIDE ALUMINUM	2
AAU6160	RING - 9.50" O.D. x .25" FLAT	4
ABC0516	BRACKET - SINGLE ROPE ATTACHMENT	1
ACN0109	CHAIN - 14.45" x # 5/0	1
AEN0058	BARRIER - 10.44" x 6.38" x 37.94"	4
AFR2447	FRAME - 8.00" O.D. x 18.01"	3
AFR2448	FRAME -3.07" x 5.50" x 30.00"	1
AFR2493	FRAME - 8.00" x 10.72" x 64.99"	1
AFR2495	FRAME - 32.88" x 42.73" x 92.33"	1
AFR2497	FRAME - 4.15" x 6.33" x 95.92"	1
AFR2498	FRAME - 5.80" x 6.33" x 94.17"	1
AMC0639	NEW CLASSIC HANDHOLD	4
AMC1167	ROPE - LADDER	1
AMC1168	CORNER CLIMBER - ROPE	1
AMC1169	ROPE - CORNER CLIMBER	1
APT5580	POST - 10.00" x 15.13" x 158.17" (CH CLIMBER)	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	10
BAE0158	WASHER - 1/4" SAE FLAT	16
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	16
BAE0595	WASHER - 3/8" SAE FLAT	28
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	52
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0632	NUT - 3/8"-16 x 1.25 BARREL	4
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	9
BAE0661	BOLT - 3/8"-16 x .50" BUTTON HEAD - SS	19
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	24
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	28
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	12
BAE01524	BOLT - 1/4"-20 x .75" BUTTON HEAD - SS	16
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	2
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	2
BAE9077	SHACKLE - "D" STYLE	1
BAE9078	BOLT - M10 x 1.5 x 40 mm FLAT HEAD	1
BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	19
BFC4240	SHEET PLASTIC - .75" x 31.47" x 34.51"	1
BFC4241	SHEET PLASTIC - .75" x 34.80" x 64.08"	1



Assembly View

Installation Instructions








Challengers® Model CH4896

Sling Seat

Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

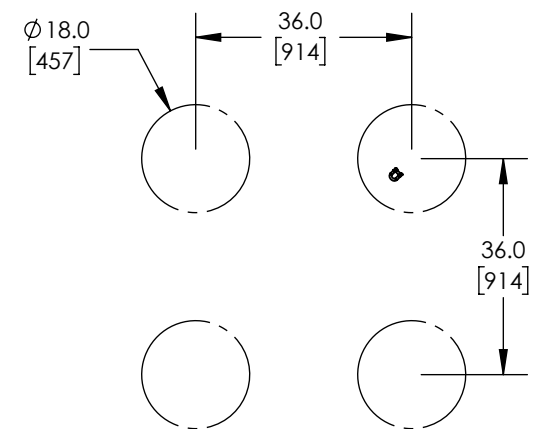
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

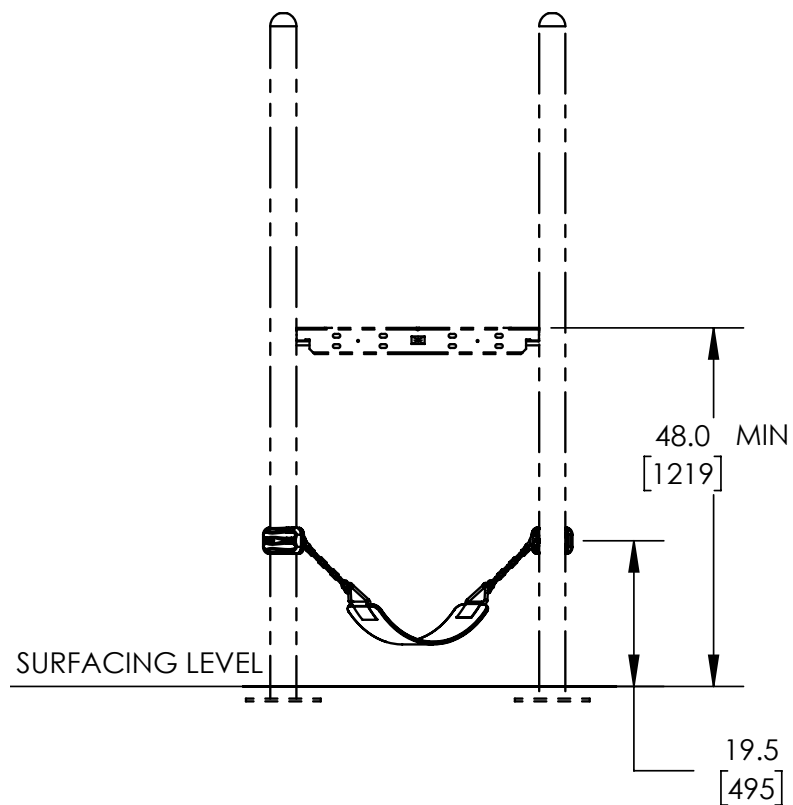
Installation Instructions

KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



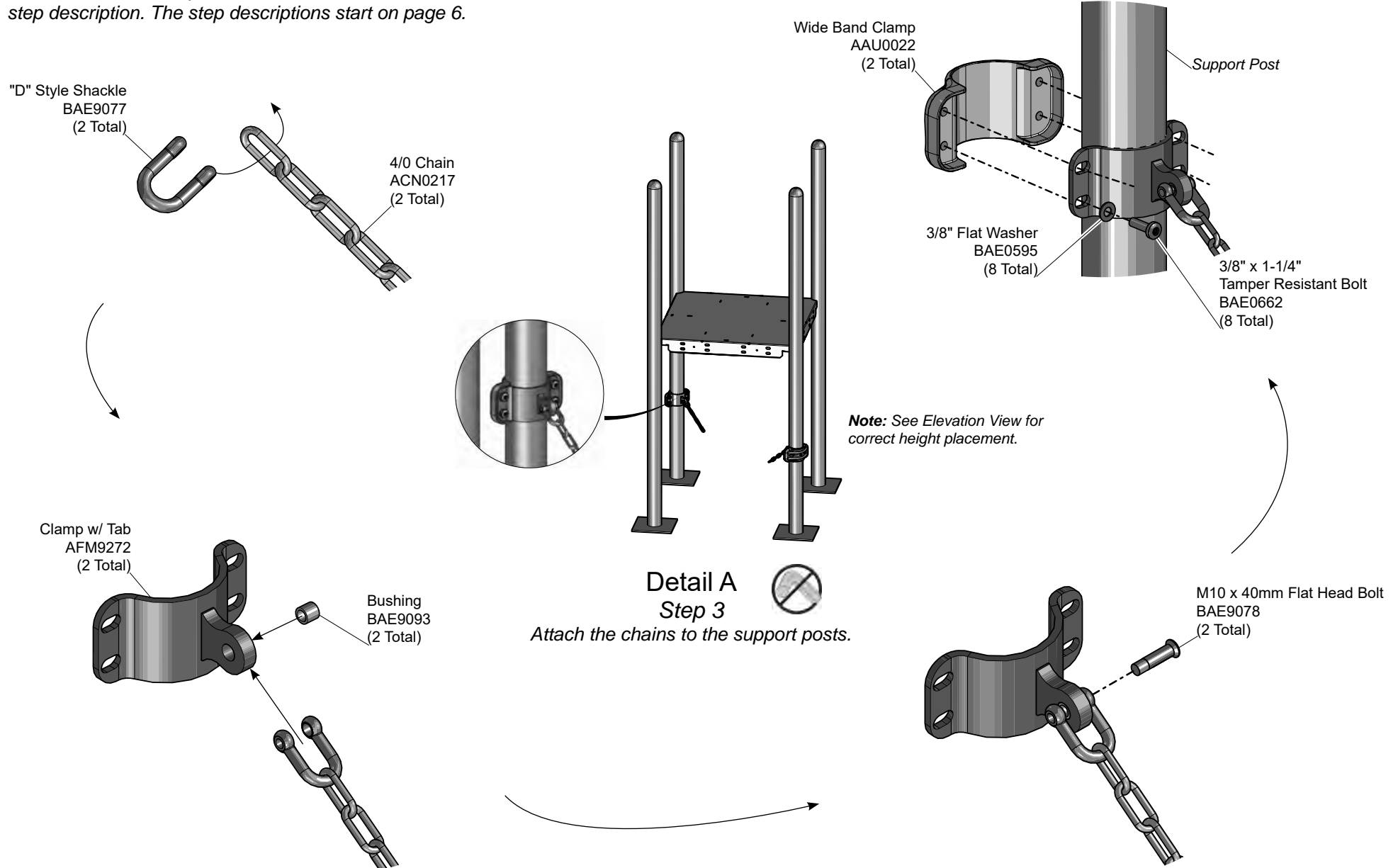
Elevation Views



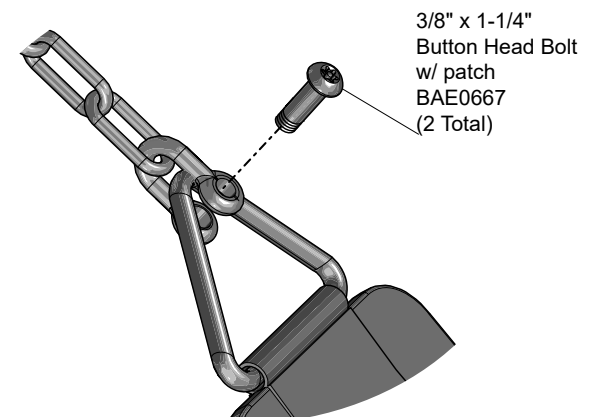
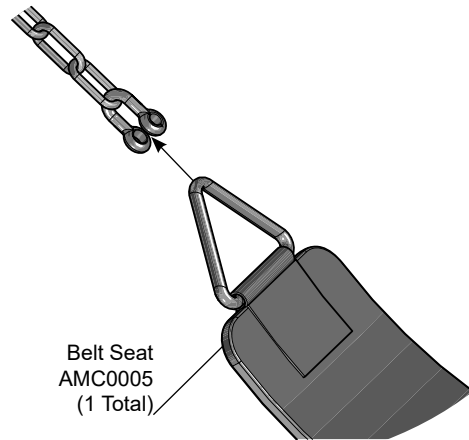
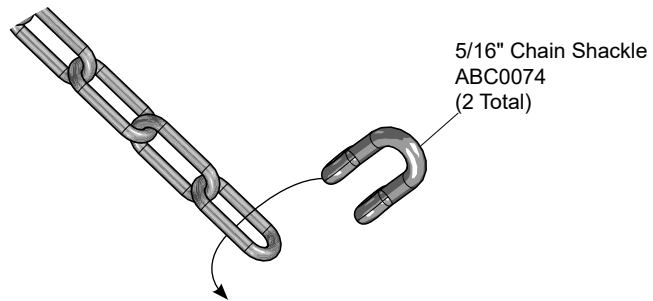
Critical Fall Height:
 ASTM F1487: 10" (254 mm)
 CSA-Z614: 254 mm
 EN1176: 254 mm

Installation Instructions

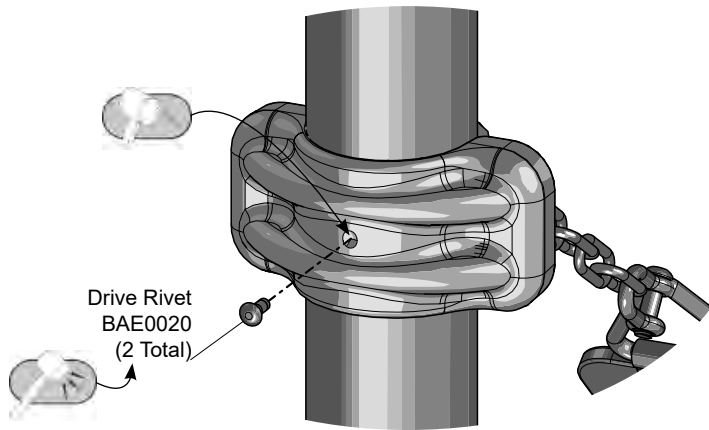
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Installation Instructions

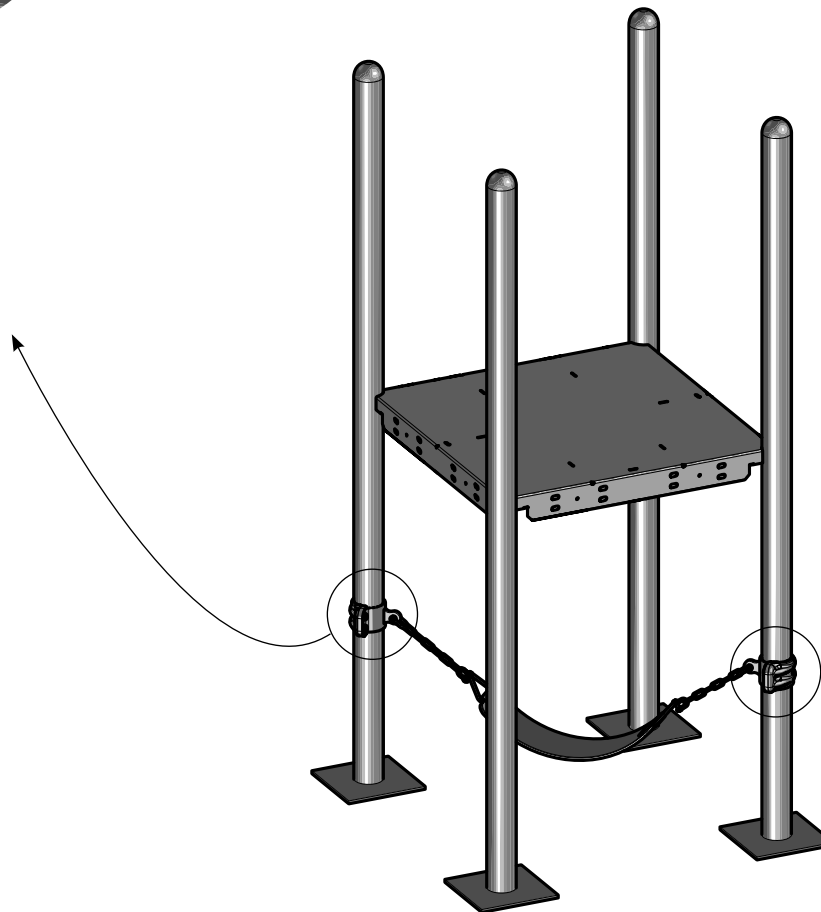


Installation Instructions



Detail C
Step 6

Secure the clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the chains to the support posts. See **Detail A and Elevation View**. Insert the shackle through the last link on one end of the chain, insert the bushing into the tab on the clamp, and attach the chains to the clamps as shown. Position the clamps around the support posts, and attach as shown. Refer to the Elevation View for the correct height placement.

Step 4: Attach the belt seat to the swing chains. See **Detail B**. Insert the shackle through the last link on the other end of the chain, and attach the belt seat as shown.

Final Details.

Step 5: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 6: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4896 - SLING SEAT

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
ABC0074	CONNECTOR - 5/16" CHAIN SHKLE w/ 3/8"-16 THREAD	2
ACN0217	CHAIN - 4/0 - 6 LINKS	2
AFM9272	CLAMP - 3.50" O.D. WITH TAB	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	8
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/ NYLON PATCH	2
BAE9077	SHACKLE - "D" STYLE	2
BAE9078	BOLT - M10 x 1.5 x 40mm FLAT HEAD	2
BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	2



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**CHALLENGERS®
MODEL CH5770
LEG LIFT**

Assembly View

Installation Preparation . . .

Recommended Crew: One (1) adult
Installation Time: 1/2 hour
Weight: 6.7 Lbs. (3 Kilos)
Use Zone: Refer to the master structure drawing
User Group: Ages 5 - 12 years (ASTM/CSA), 6-14 (EN)

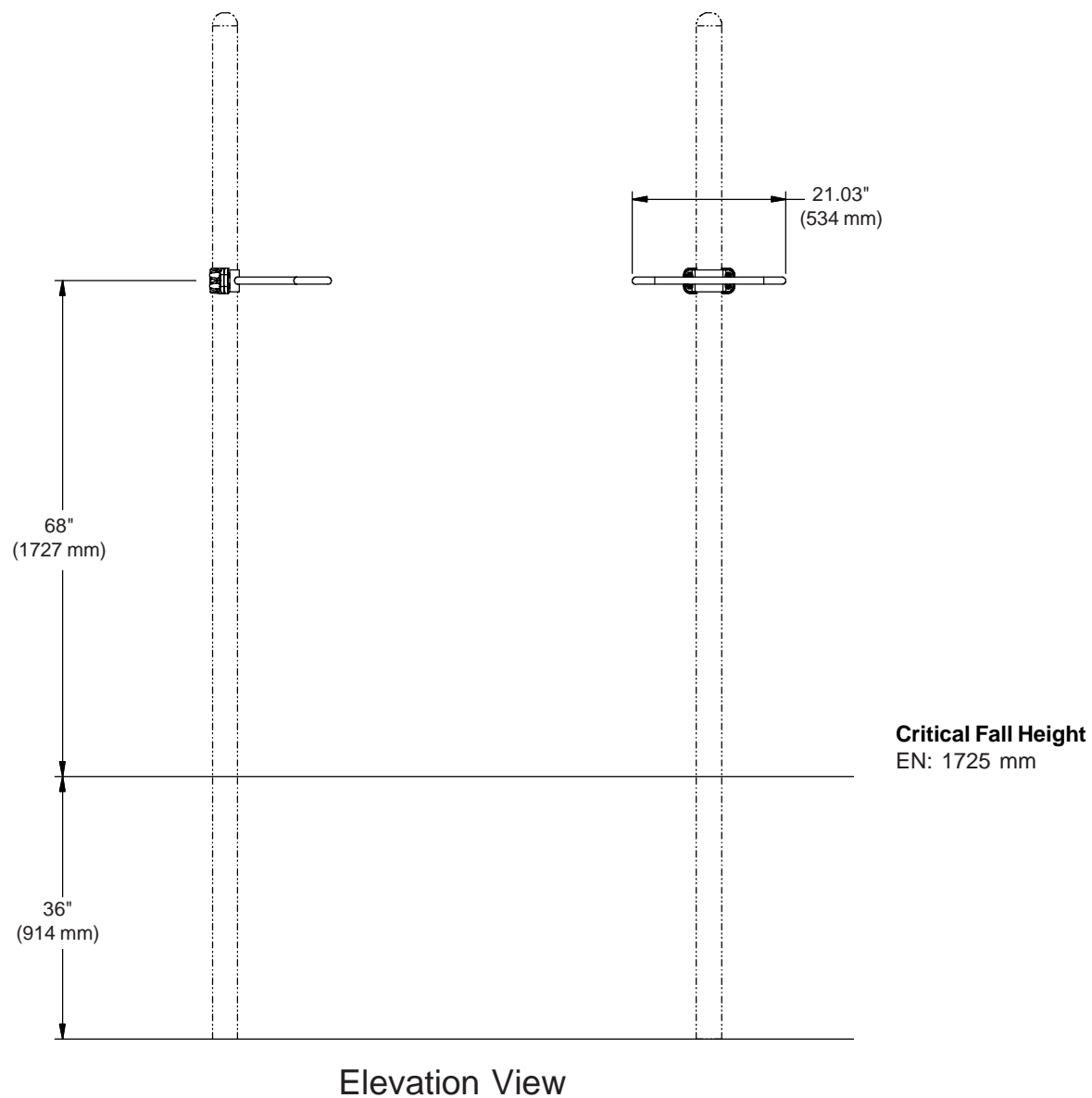
Torque Specification:

Bolts & Nuts: Snug tighten and
tighten an additional one-half turn.
Set Screws: Snug tighten and
tighten an additional full turn.

Maintenance . . .

- Playworld Systems® strongly recommends the use of protective surfacing within the use zone of each play structure in accordance with the appropriate standard for your location appropriate for the fall height of each structure.
- Playworld Systems® strongly recommends close supervision of children as they play. The owners of playground equipment and the parents or guardians of children are responsible for this proper supervision. Do not use playground equipment when it is wet or snow covered.
- As the owner of playground equipment, you are responsible for the maintenance of the equipment and surrounding play area. A comprehensive maintenance and inspection schedule must be developed and all equipment inspected frequently.

INSTALLATION INSTRUCTIONS



INSTALLATION INSTRUCTIONS

INSTALLATION

✓ Notes Before You Begin:

- Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.
- If during the installation process a bolt needs to be removed from a part or parts, it will be necessary to apply a drop of liquid thread lock / loctite to the bolt before re-installation.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the telephone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware by referencing the detail drawings and packing list.

Step 3: Leg Lift will be attached to a support post sold separately.

Attach leg lift to support post.

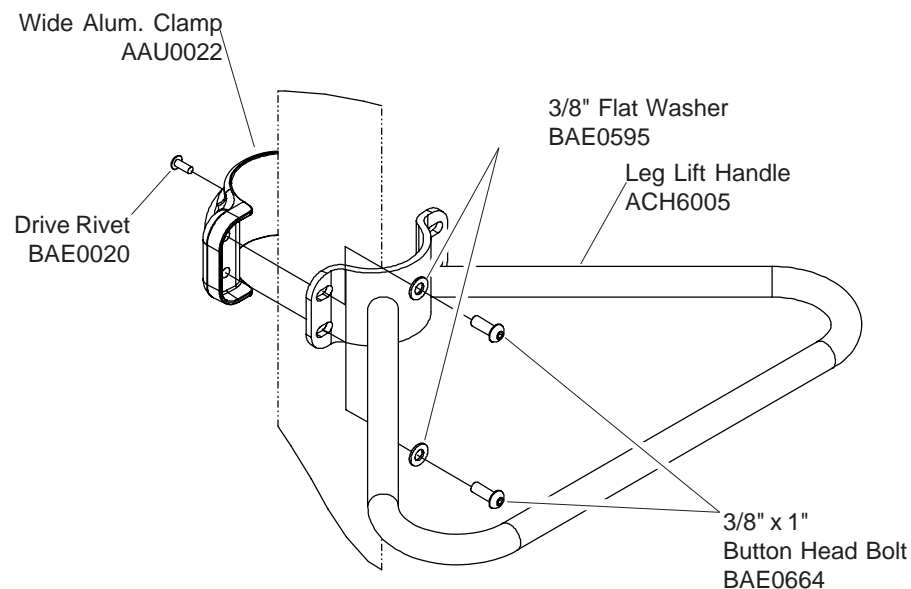
Step 4: Attach leg lift to support post. See Detail A. Select leg lift handle, wide aluminum clamp, (4) four 3/8" x 1" button head bolts, and (4) four 3/8" flat washers. Sandwich the post between the wide clamp and handle clamp band. Align holes. Apply a drop of loctite to the bolt threads and insert each bolt through a flat washer, through the handle clamp band, and thread into the wide clamp.

Final Details.

Step 5: Adjust height to approximately 68" (1727 mm) above the protective surfacing level. See **Elevation View**. Plumb and level entire component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. See page 1 of these instructions.

Step 6: Install drive rivet. After the equipment assembly is complete, install a drive rivet in the aluminum clamp band to permanently secure it to the support post. See **Detail A**. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.



Detail A

INSTALLATION INSTRUCTIONS

BILL OF MATERIAL

CH5770 - LEG LIFT

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3-1/2" WIDE ALUMINUM	1
ACH6005	HANDLE - LEG LIFT w/ 3-1/2" CLAMP	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAD0085	THREAD LOCKING ADHESIVE	1

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Assembly View (representative model)

Model	Deck Height
ZZCH5950	12" (305 mm)
ZZCH5960	24" (610 mm)
ZZCH5970	36" (915 mm)

Installation Instructions


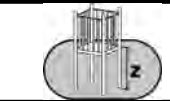





Challengers[®] Models CH5950,
CH5960, and CH5970

1, 2, and 3 Rung Overhead Event Access Ladder
12 in. (305 mm), 24 in. (610 mm), and 36 in. (915 mm)

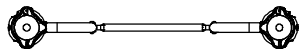
Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 1.5 installation-hours
 Concrete Required: 0.06 cubic yard (0,04 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 2-14

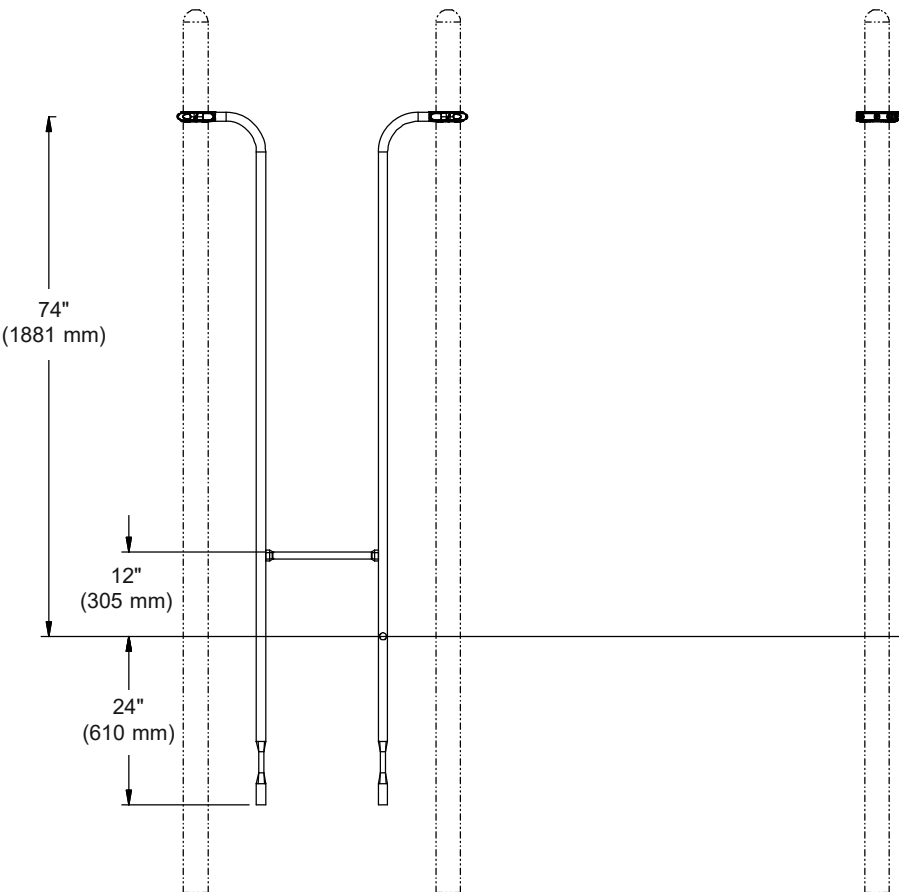
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

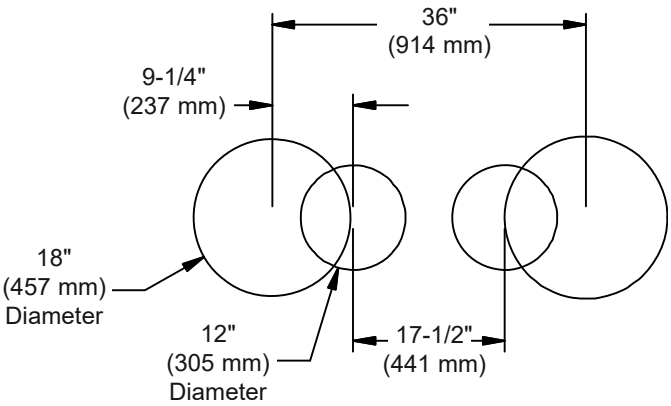
Installation Instructions



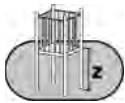
Top View



Elevation Views



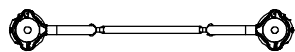
Footings Diagram
All Models



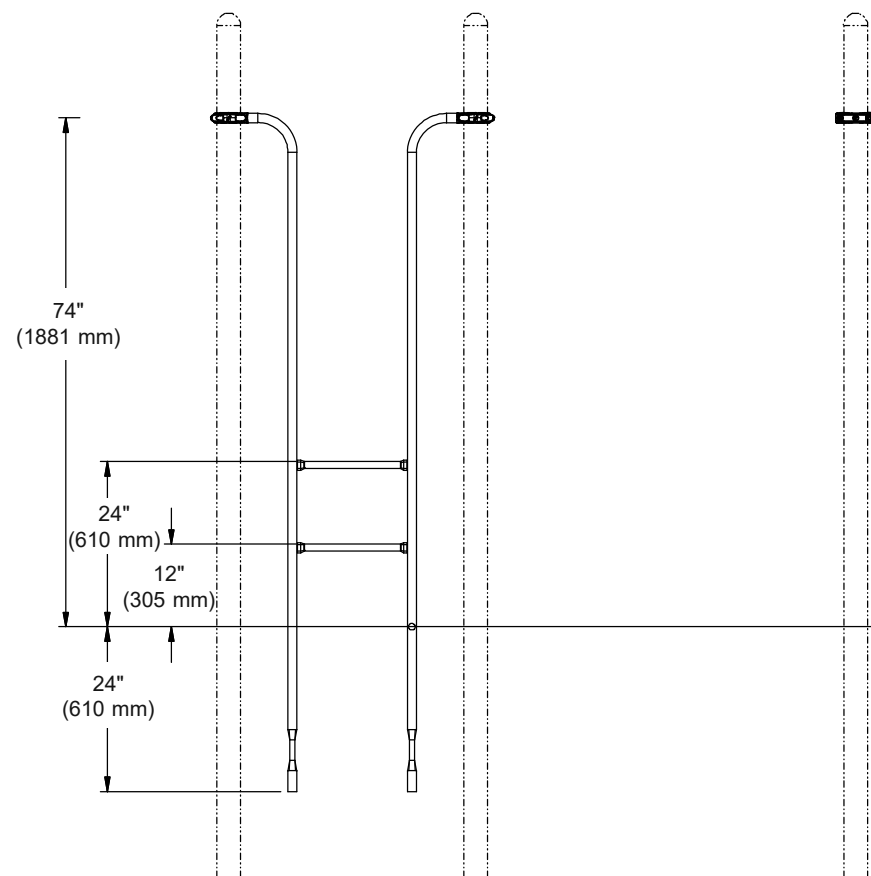
ASTM F1487: 12" (305 mm)
CSA-Z614: 305 mm
EN1176: 305 mm



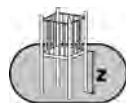
Installation Instructions



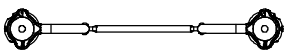
Top View



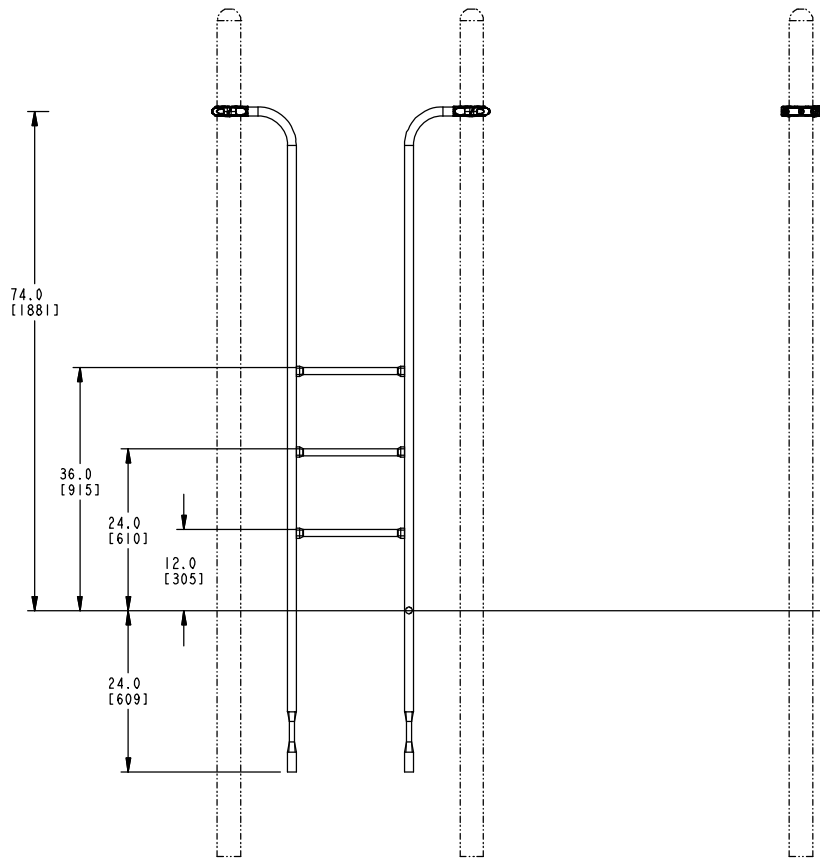
Elevation View



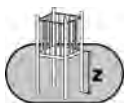
ASTM F1487: 24" (610 mm)
CSA-Z614: 610 mm
EN1176: 610 mm



Top View



Elevation Views

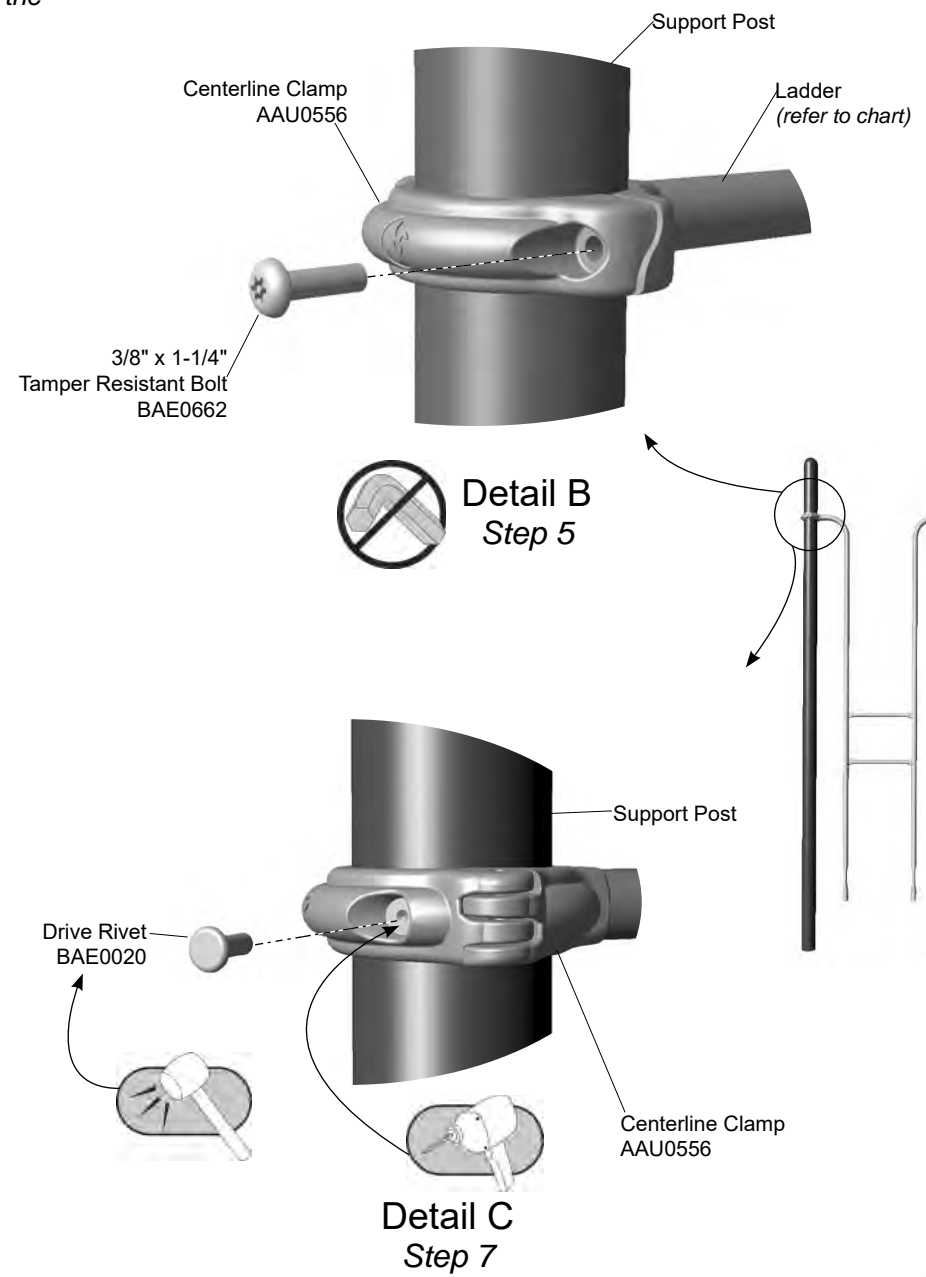
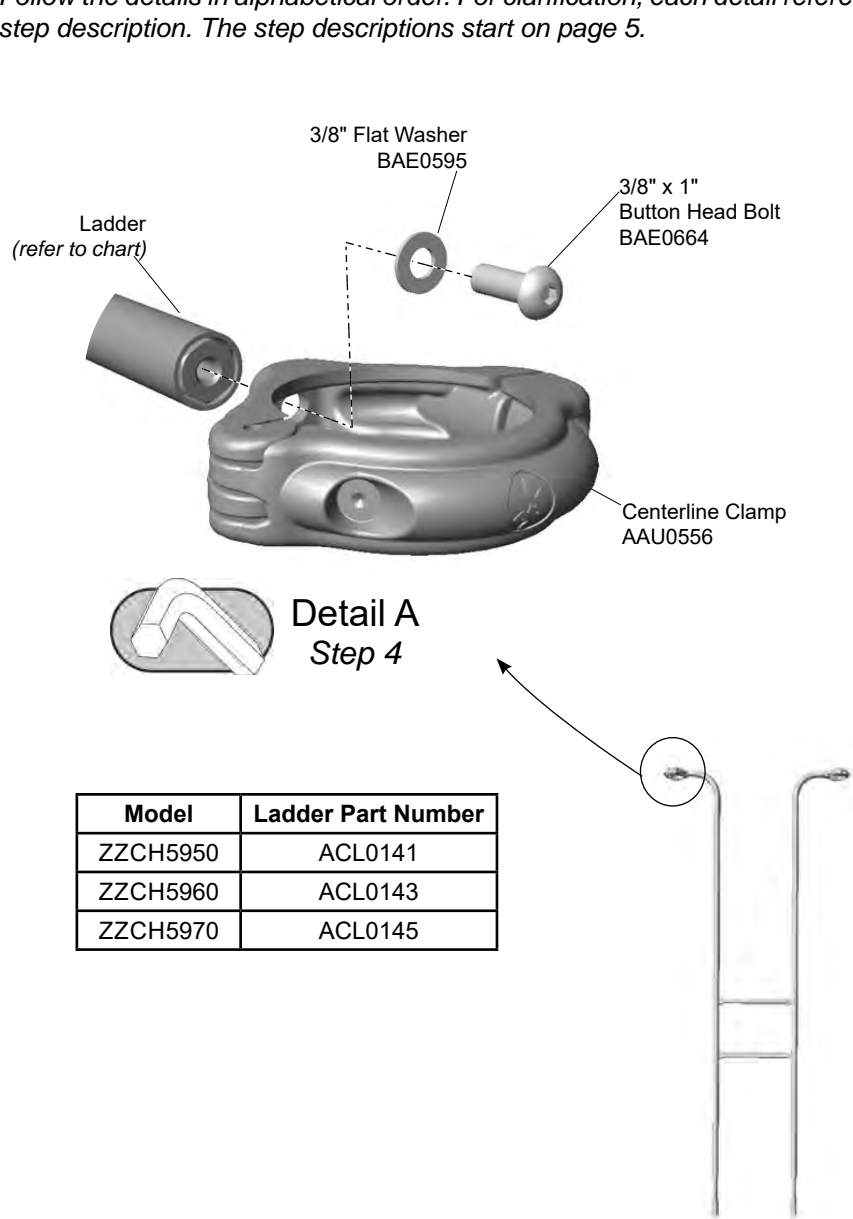


ASTM F1487: 36" (915 mm)
CSA-Z614: 915 mm
EN1176: 915 mm



Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Component Footing Details** in the *Challenger Guidelines*.

Attach the clamps to the access ladder.

__Step 4: Attach the clamps to the access ladder. See **Detail A**. Select the access ladder, the centerline clamps, and the appropriate hardware. There are (2) two connections. Position the neck of each clamp against the top of the ladder. Attach as shown. Turn the hinges toward the deck and fully tighten the connections.

Attach the clamps to support posts.

__Step 5: Attach the clamps to support posts. See **Detail B**. Select the appropriate hardware. There are (2) two connections. Place the ladder into the excavated footings. Close the clamps around the support posts and attach as shown. Snug tighten connection only. Adjust the height of the access ladder to the dimensions as shown in the **Elevation View** and secure clamps to support posts.

Note: The surfacing level indicator line on the ladder should be at the same level as the ones on the support posts.

Final Details.

__Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 7: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH5950 - OVERHEAD EVENT ACCESS LADDER (1) ONE RUNG

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0141	LADDER - OVERHEAD ACCESS (1) RUNG	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2

CH5960 - OVERHEAD EVENT ACCESS LADDER (2) TWO RUNGS

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0143	LADDER - OVERHEAD ACCESS (2) RUNG	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2

CH5970 - OVERHEAD EVENT ACCESS LADDER (3) THREE RUNGS

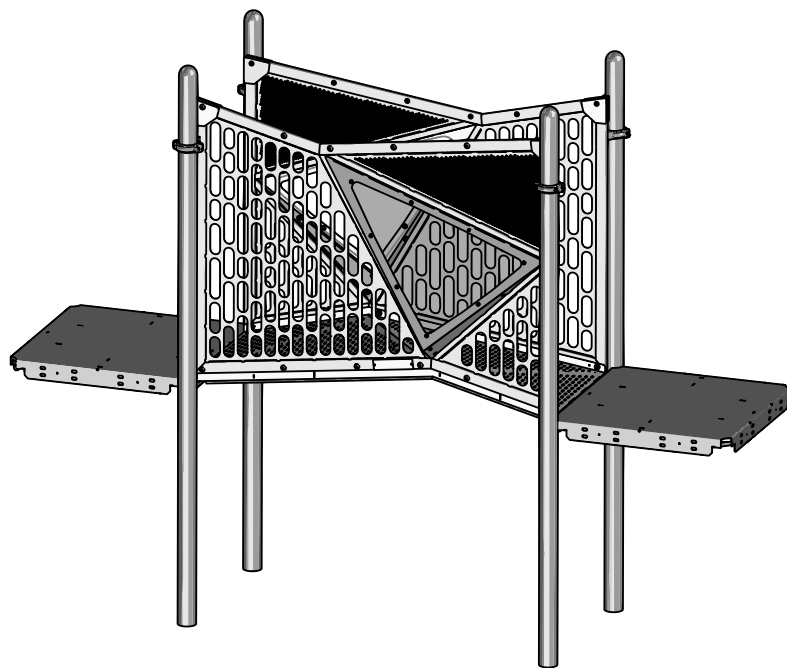
PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0145	LADDER - OVERHEAD ACCESS (3) RUNG	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2



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Assembly View (representative model)

Installation Instructions








Challengers® Model CH6381

KaleidoCrossing Catwalk

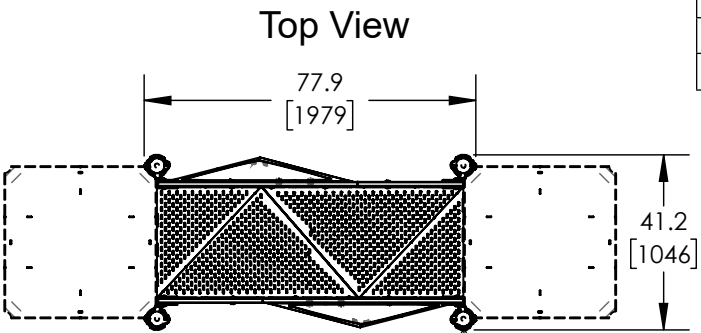
Installation Preparation

Recommended Crew: Three (3) adults
 Installation Time (In-Ground): 2 man-hours
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

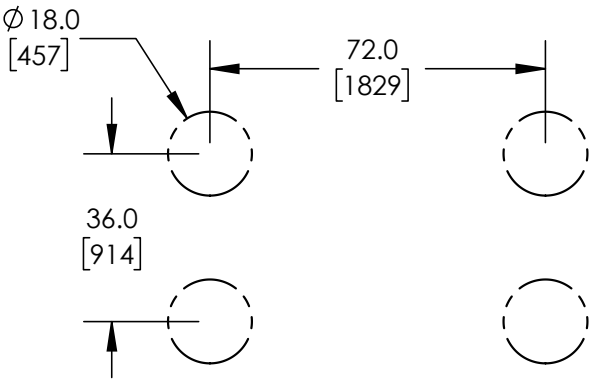
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

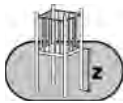
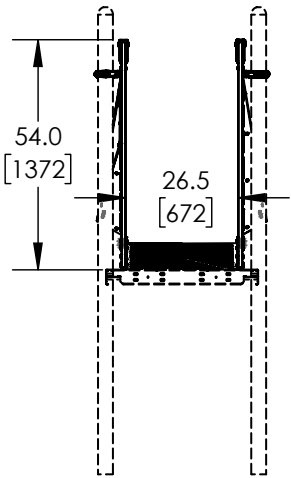
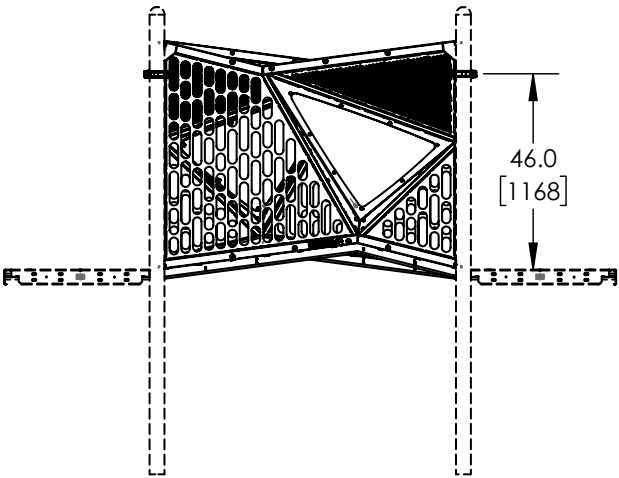
Installation Instructions



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram

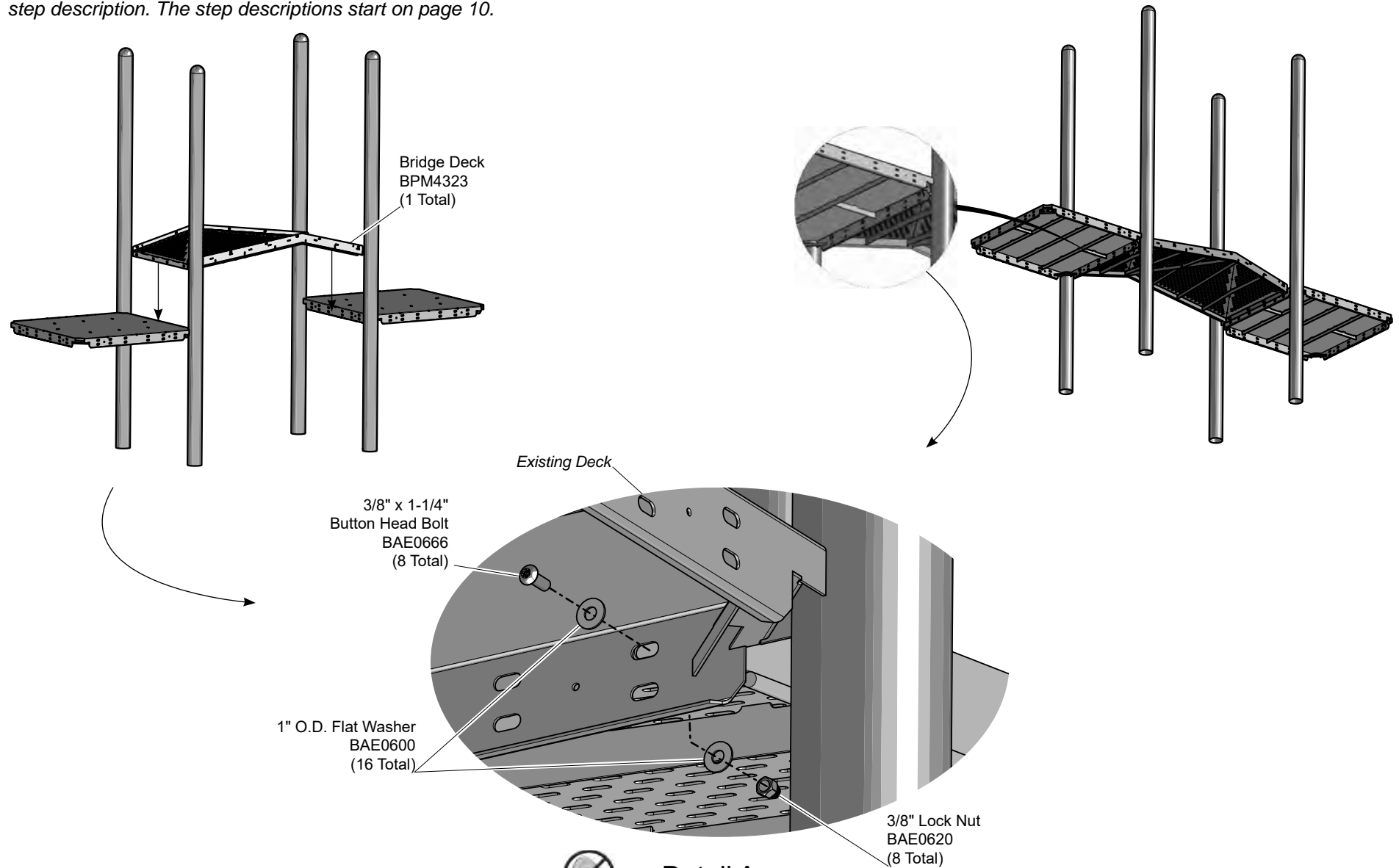


Height of the deck

Elevation Views

Installation Instructions

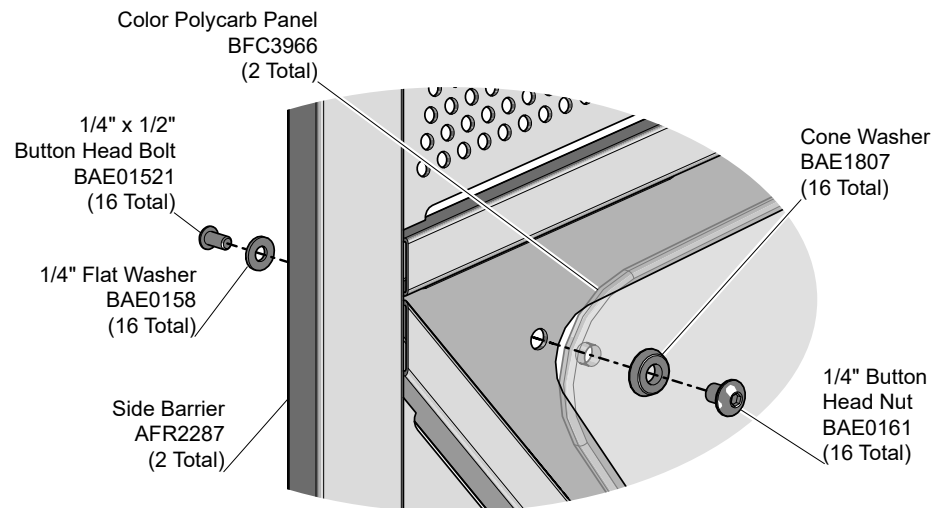
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 10.



Detail A Step 3

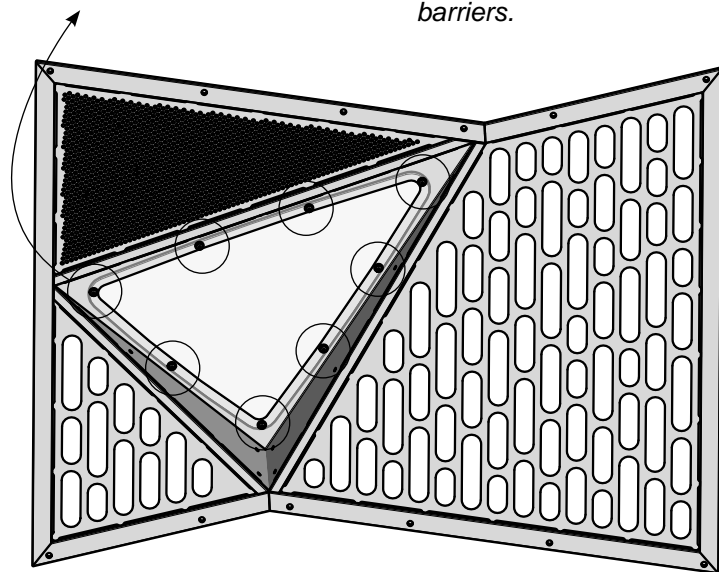
Attach the bridge deck to the existing decks.

Installation Instructions

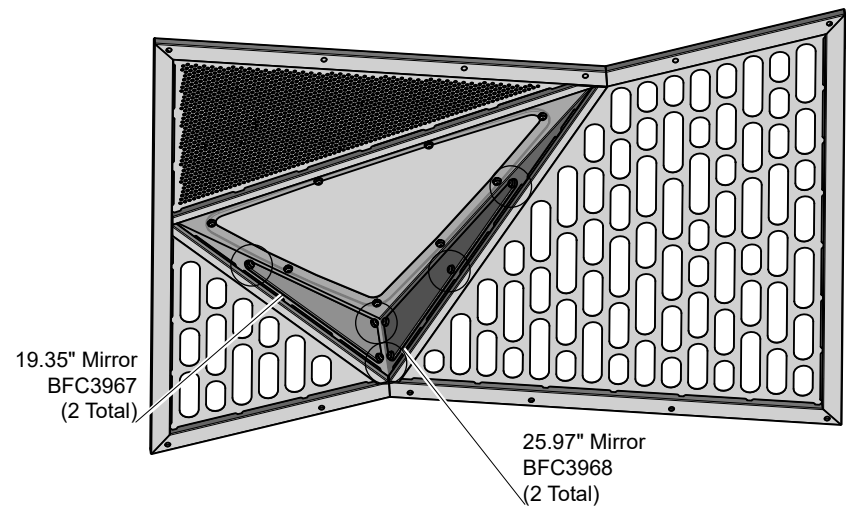


Detail B
Step 4

Attach the color polycarb panels to the side barriers.

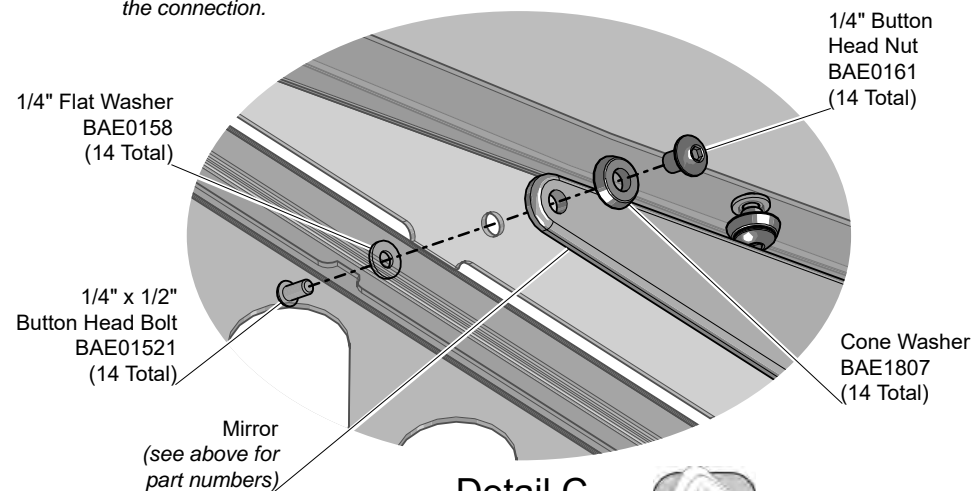


Inside view of panel - circles representative of connections



Note: Remove film from mirrors before attaching to the barriers.

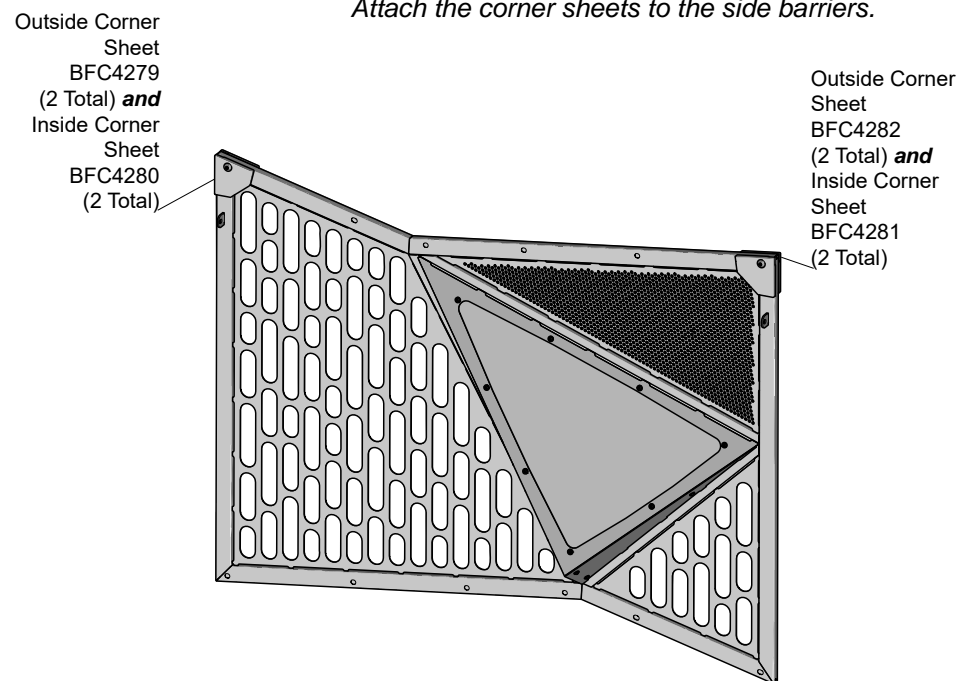
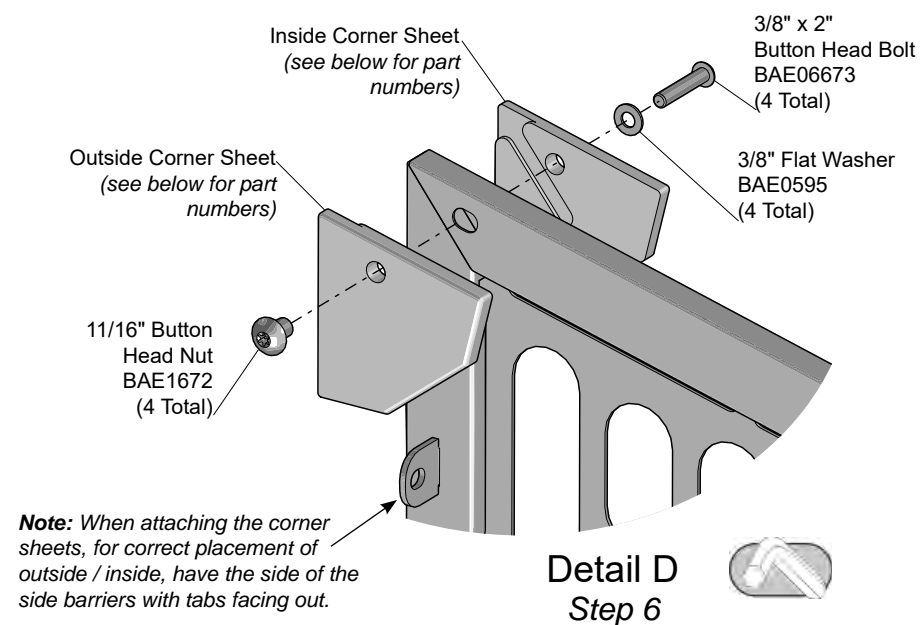
Note: The side barrier is shown transparent for ease of viewing the connection.



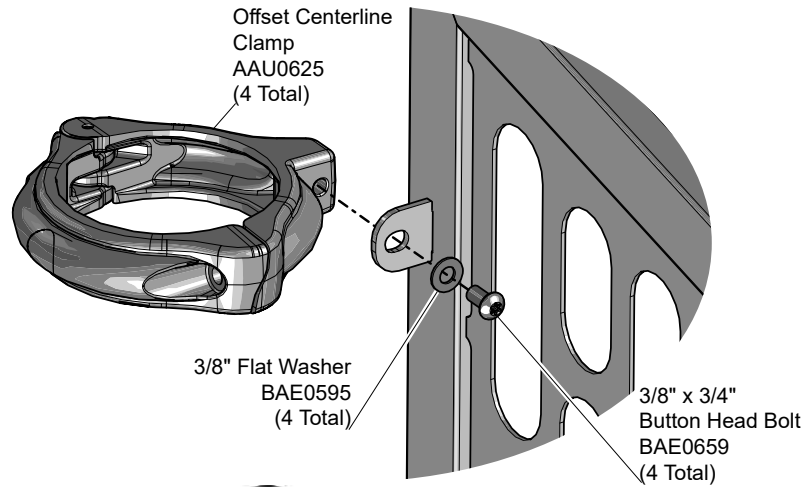
Detail C
Step 5

Attach the mirrors to the side barriers.

Installation Instructions

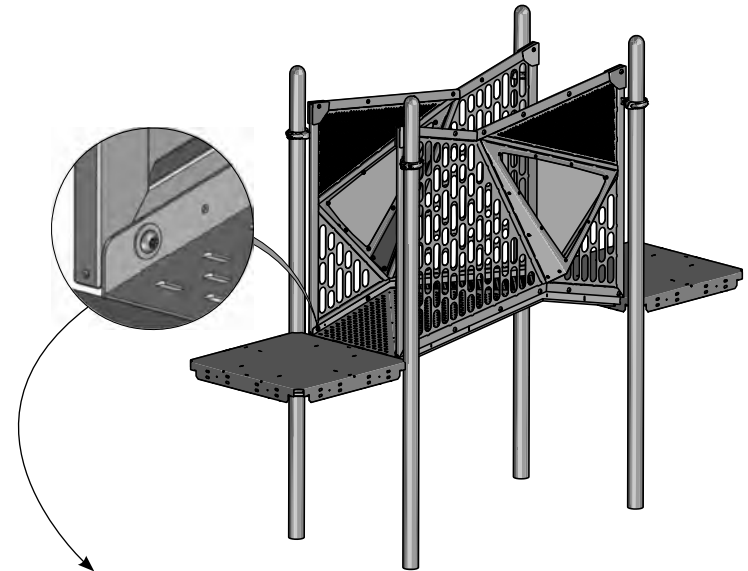
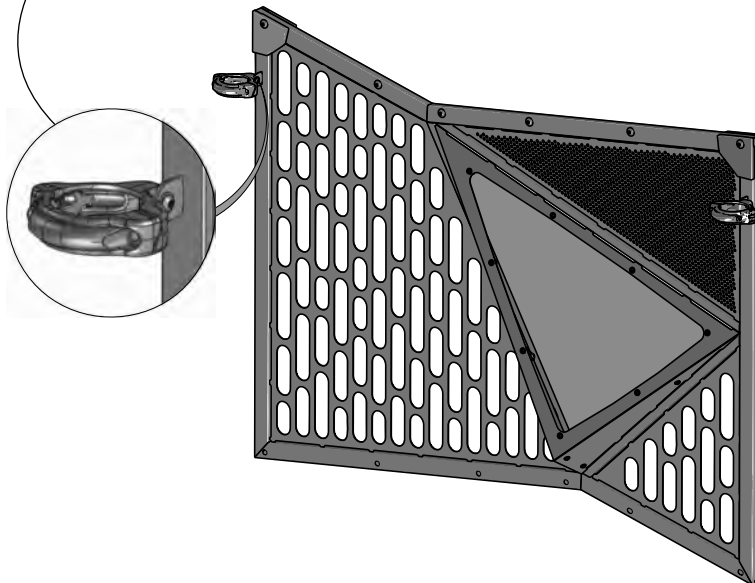


Installation Instructions



Detail F Step 8

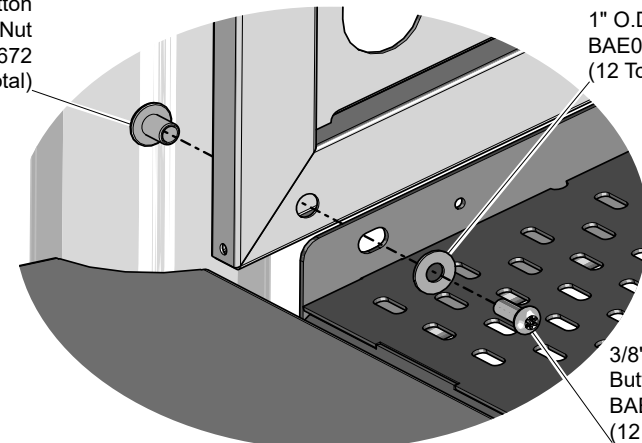
Attach the clamps to the side barriers.



Note: The side of the barriers with the mirrors should be facing inside towards the bridge deck.

3/8" x 11/16" Button Head Nut
BAE1672
(12 Total)

1" O.D. Flat Washer
BAE0600
(12 Total)



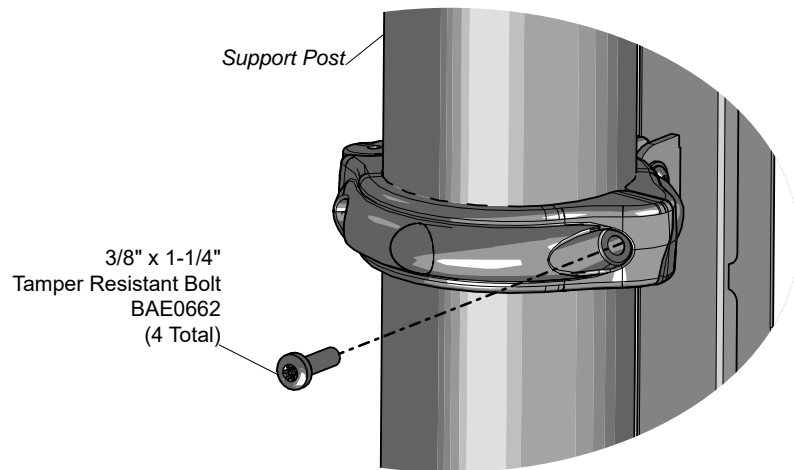
3/8" x 1-1/4" Button Head Bolt
BAE0666
(12 Total)



Detail G Step 9

Attach the side barriers to the bridge deck.

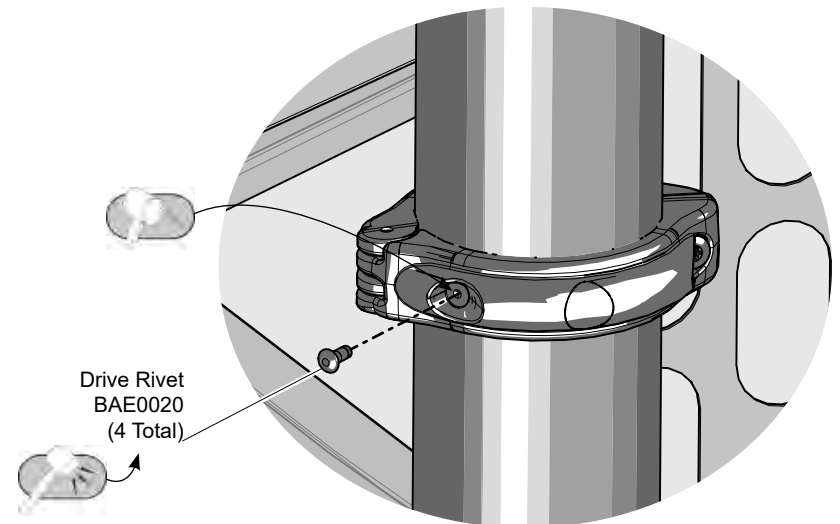
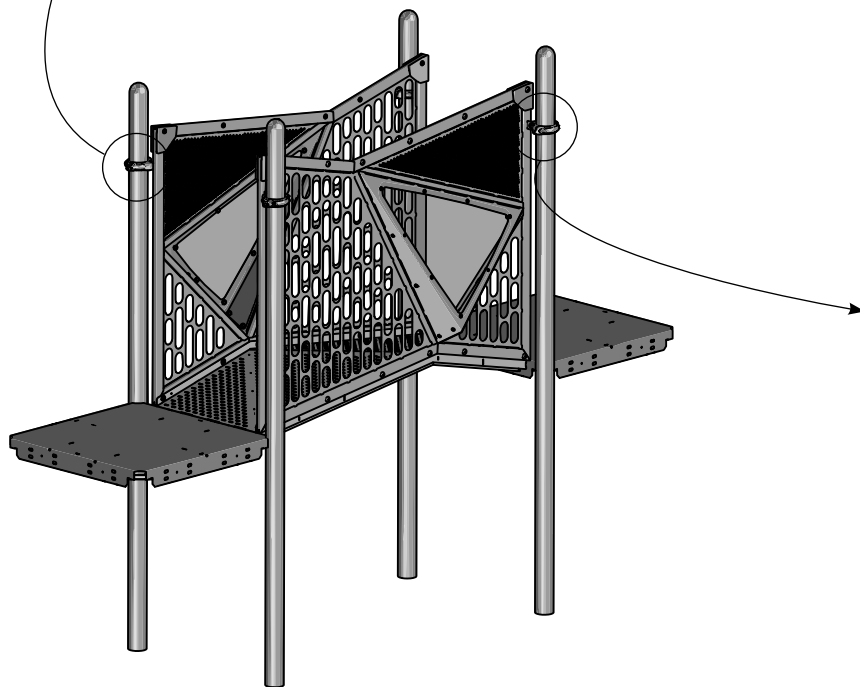
Installation Instructions



Detail H
Step 10



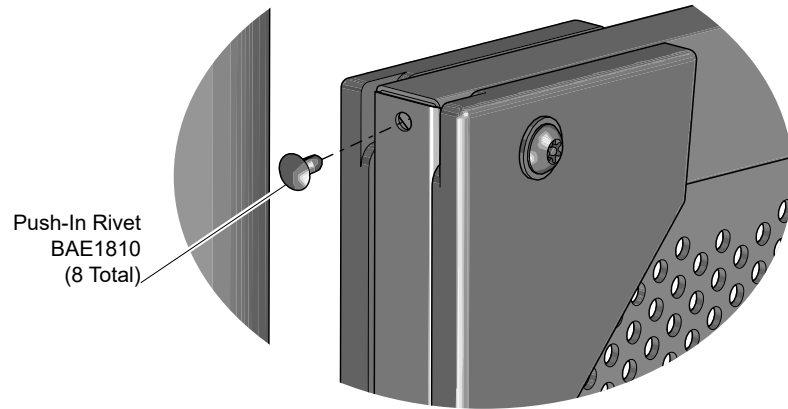
Attach the clamps to the support posts.



Detail J
Step 12

Secure the clamps to the support posts.

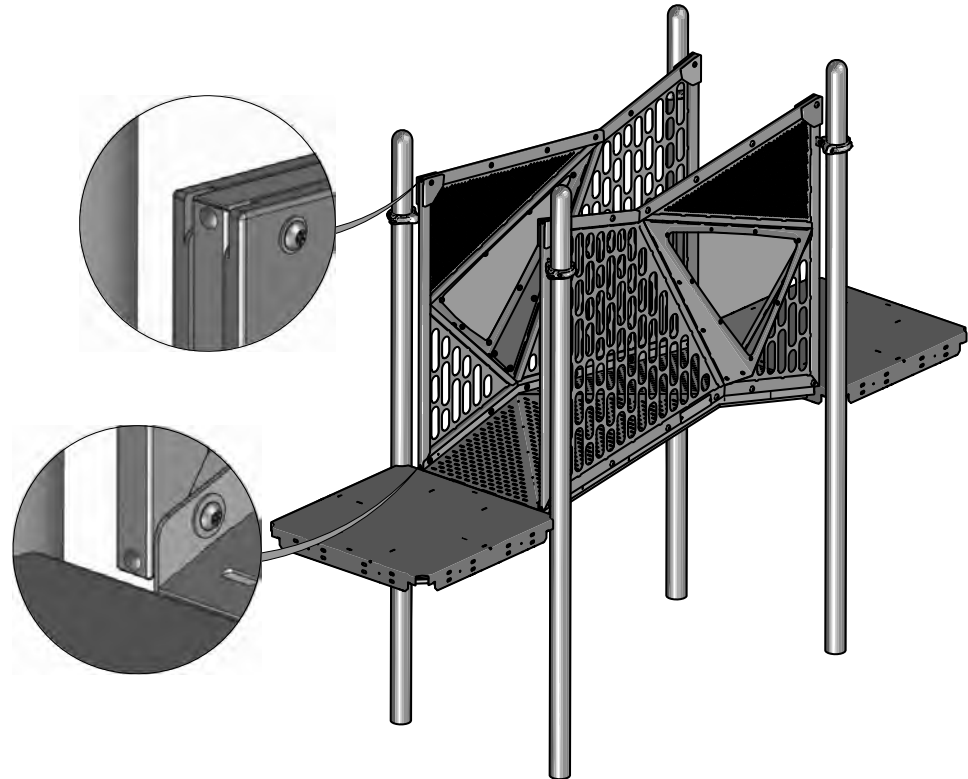
Installation Instructions



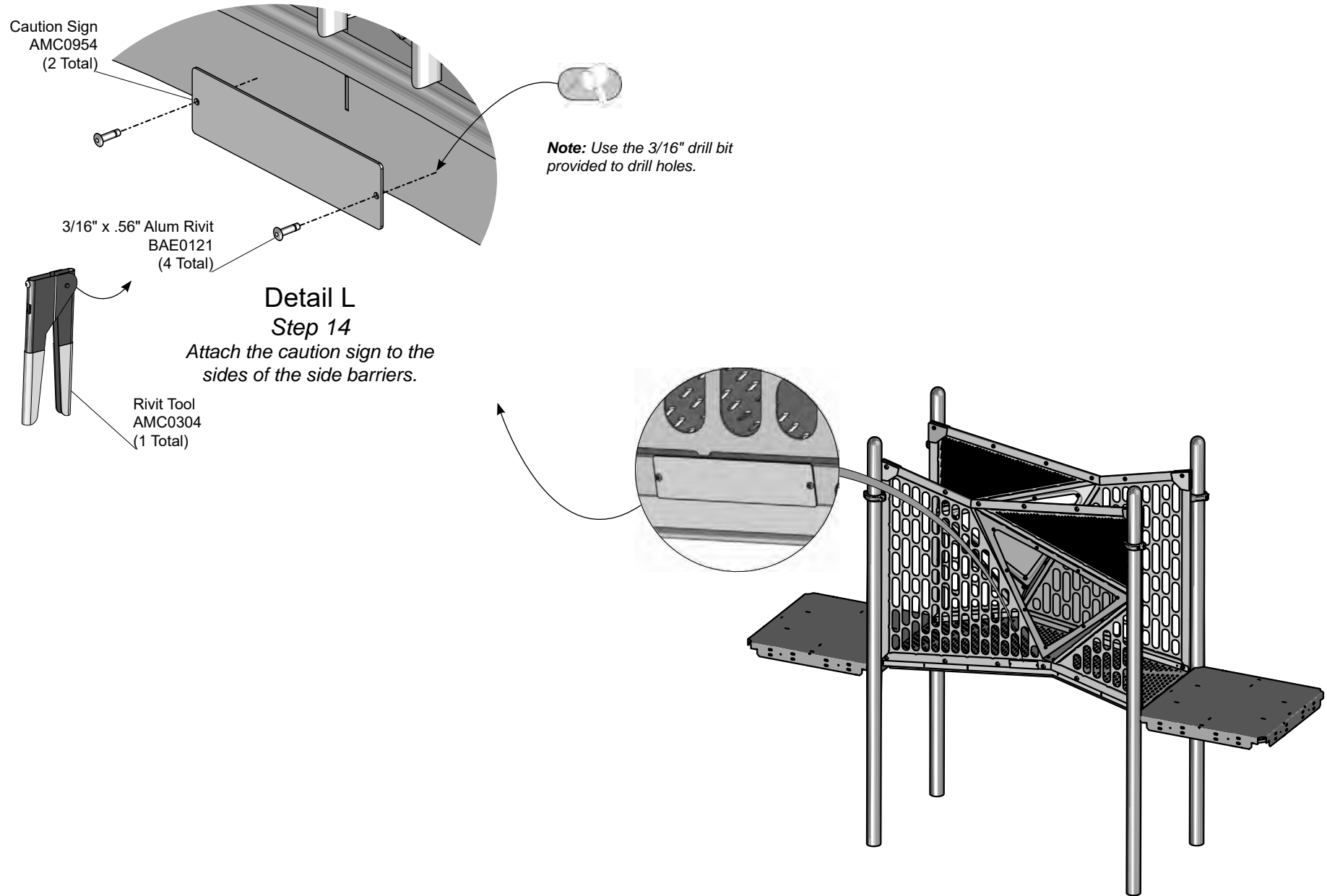
Detail K

Step 13

Fill in open holes on ends of side barriers.



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the bridge deck to the existing decks. See **Detail A**. With adequate manpower, lower the bridge deck between the existing decks, and attach through the upper set of holes as shown.

Step 4: Attach the color polycarb panels to the side barriers. See **Detail B**. Align the holes on the panels with the holes on the inside of the barriers, and attach as shown.

Step 5: Attach the mirrors to the side barriers. See **Detail C**. Align the holes on the mirrors with the holes on the inside of the barriers, and attach as shown.

Step 6: Attach the corner sheets to the side barriers. See **Detail D**. Place the corner sheets against the corners on the side barriers, and attach as shown.

Note: When attaching the corner sheets, for correct placement of outside / inside, have the side of the side barriers with tabs facing out.

Step 7: Fill in open holes along top of side barriers. See **Detail E**. Fill in open holes along top edge of side barriers as shown.

Step 8: Attach the clamps to the side barriers. See **Detail F**. Position the clamps on the outside edge of the side barriers, align the holes, and attach as shown.

Step 9: Attach the side barriers to the bridge deck. See **Detail G**. With adequate manpower, position the side barriers against the sides of the bridge deck. Align the holes, and attach as shown.

Note: The side of the barriers with the mirrors should be facing inside towards the bridge deck.

Step 10: Attach the clamps to the support posts. See **Detail H**. Close the clamps around the support posts, and attach as shown.

Final Details.

Step 11: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 12: Install drive rivets. See **Detail J**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 13: Fill in open holes on ends of side barriers. See **Detail K**. Press the rivets in the open holes on the ends of the side barriers as shown.

Step 14: Attach the caution sign to the sides of the arch bridge. See **Detail L**. Using the caution sign as a template, position the caution sign against the side of the side barriers, using the drill bit provided, drill two holes on each side of the bridge. Attach the sign as shown.

CH6381 - KALEIDOCROSSING CATWALK

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3.50" OFFSET CENTERLINE DIE CAST	4
AFR2287	FRAME - 72.00" x 53.99" x 6.75"	2
ASY0439	KIT - CAUTION - WATCH YOUR HEAD SIGN	1
AMC0304	TOOL - 3/16" STANDARD RIVET GUN	1
AMC0954	SIGN - CAUTION WATCH YOUR HEAD	2
BAE0121	RIVIT - 3/16" x .56" ALM POP (.251-.375 GRIP RANGE)	4
BAE0181	SCREW - #8 x 1/2" PAN HEAD PHILLIPS	4
BAE1668	MISC - 3/16" DRILL BIT	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	30
BAE0158	WASHER - 1/4" SAE FLAT	30
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	30
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	28
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	8
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	4
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	4
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	20
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - STS	4
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	24
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	30
BAE1810	RIVET - PUSH IN WITH ARROW SHANK FOR .25 HOLE	8
BFC3966	SHEET - 33.60" x 25.20" x .25" COLOR POLYCARB	2
BFC3967	SHEET - 19.35" x 4.83" x .25"	2
BFC3968	SHEET - 25.97" x 4.71" x .25"	2
BFC4279	SHEET PLASTIC - 5.03" x 4.84" x .75"	2
BFC4280	SHEET PLASTIC - 5.03" x 4.84" x .75"	2
BFC4281	SHEET PLASTIC - 5.05" x 4.95" x .75"	2
BFC4282	SHEET PLASTIC - 5.05" x 4.95" x .75"	2
BPM4323	DECK - BRIDGE	1



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Attention: Owner

The Overhead Components are designed for hand over hand movement across the top rungs to foster play activity which combines upper body development, body control, hand eye coordination, and gripping ability.

Improper play and behavior on the Overhead Component can result in serious accidents. The following rules for the use of the component must be applied to reduce the possibility of debilitating injuries:

- Properly trained adult supervision is required at all times. The components are designed to accommodate children 5 through 12 years of age. Supervisors and parents should be aware of appropriate age and physical capabilities of the users.
- Do not crawl on, sit on, stand on or jump off the top of the assembly.
- Users must move in same direction across the length of the top of the component assembly. Always use fingers and thumbs for "Lock Grip" on hand rungs. Do not begin movement across the top hand rungs from opposite ends of the structure.
- Adequate distance, such as half the length of the ladder, must be maintained between users proceeding across the hand rung assembly.
- Be alert to swinging feet generated by body movement of participants using the apparatus.
- Do not use when hand rungs are wet as gripping capability is impaired. Use only when rungs are dry.

SUPERVISION INSTRUCTIONS

PLAYWORLD SYSTEMS® OVERHEAD COMPONENTS (SEE COMPONENT LISTING BELOW)

- Avoid speed contests or trying to cover too large a distance in one move.
- Drop from hand rungs with knees slightly bent and land on both feet.
- Protective surfacing material must be installed and maintained within the use zone of the Overhead Component in accordance with ASTM specification F1292 appropriate for the fall height of the Overhead Component .
- Review and familiarize warning document supplied with each Overhead Component shipment outlining owner's responsibilities on provided and maintaining required impact absorbing surfacing material.

As the owner of this playground equipment, you are responsible for communicating proper usage to those who may play on it.

Playworld Systems accepts NO responsibility for improper use.

Overhead Components include:

- Horizontal Ladders
- Horizontal Hand Over Hand Ladders
- Horizontal Loop Rung Ladders
- Under Catwalk Hand Over Hand
- Under Catwalk Loop Rung Ladder
- Sky Link
- Sky Arch
- Unity Overhead Canopy

SUPERVISION INSTRUCTIONS



Movement Must Be In Same Direction With Adequate Distance Between Users



Do Not Begin Movement From Opposite Directions



Do Not Use When Hand Rungs Are Wet



Do Not Crawl Or Sit On Top Of The Hand Over Hand Ladder



Do Not Stand On Or Jump Off Top Of The Hand Over Hand Ladder

Overhead Component shown is for example only. May not be the component ordered.



Assembly View

Installation Instructions








Challengers® Model CH6936

Horizontal Ladder with Parallel Bars

Installation Preparation

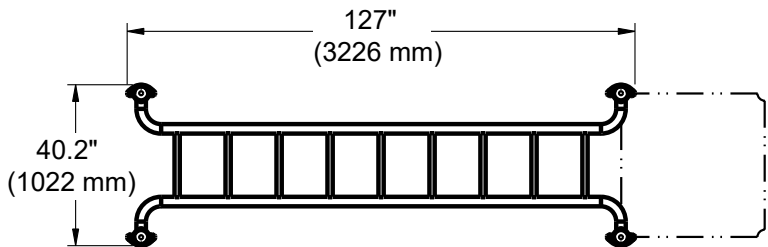
Recommended Crew: Two (2) adults
 Installation Time: 1 man-hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

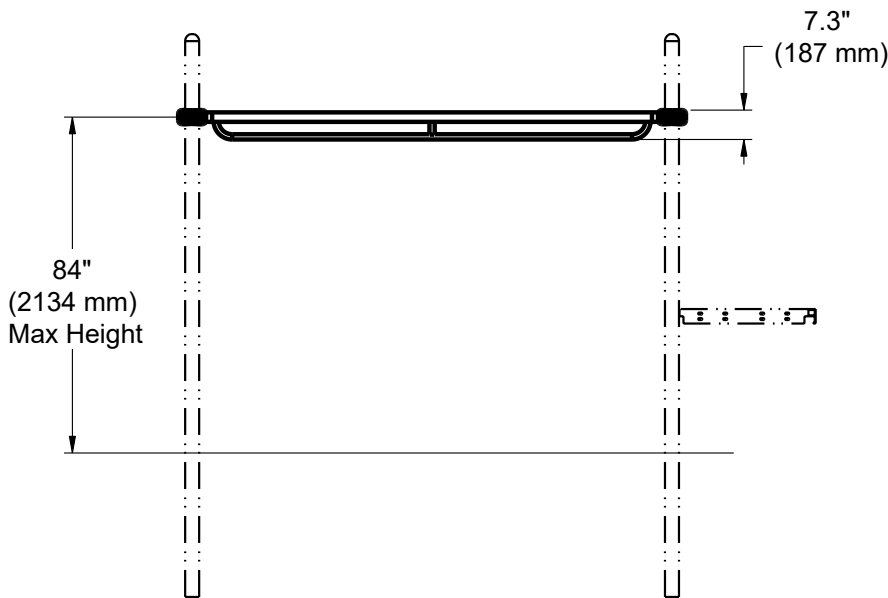
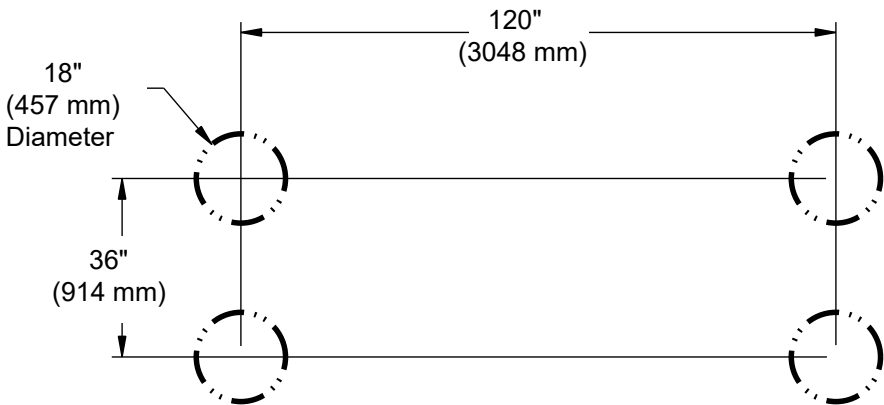
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	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

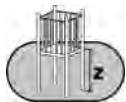
Top View



Footing Diagram



Elevation Views

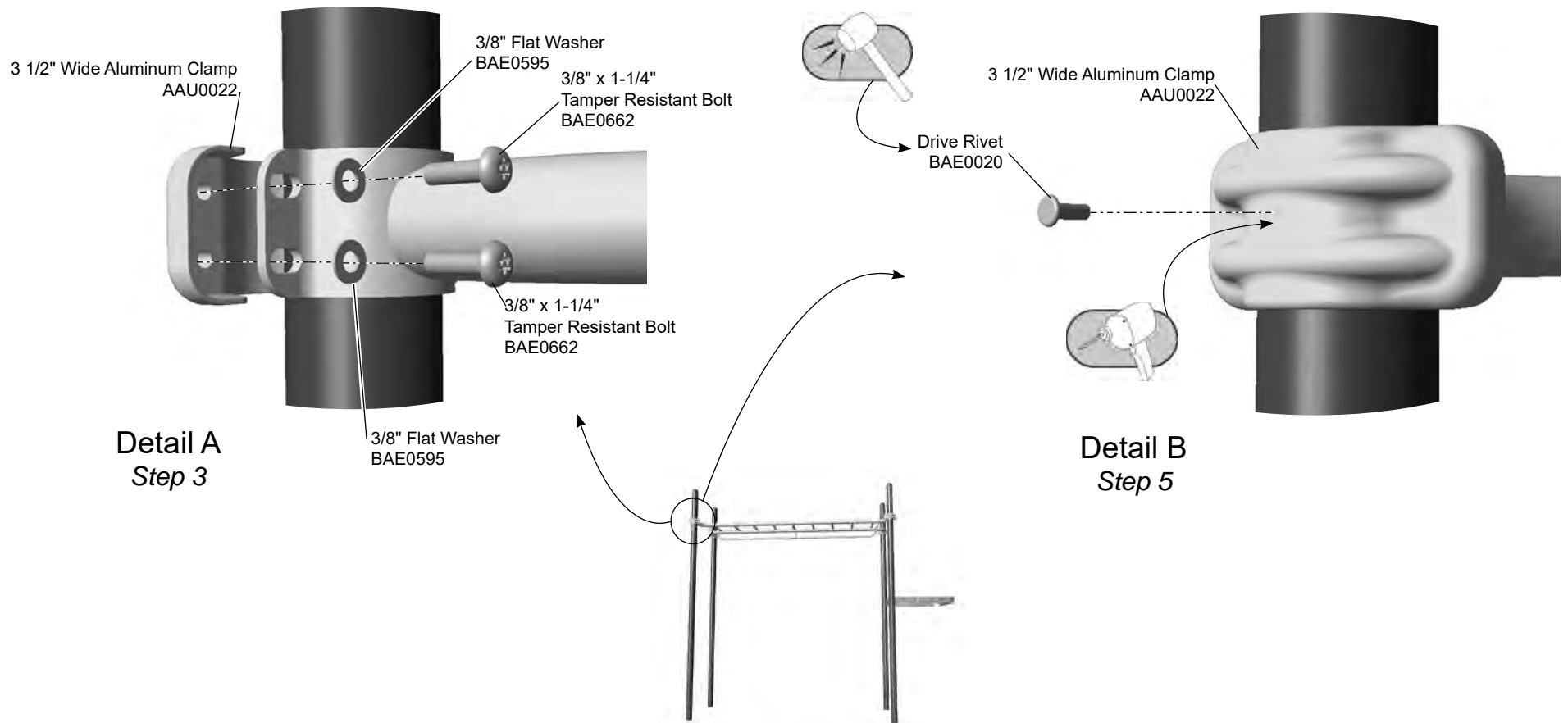


ASTM F1487: 84" (2134 mm)
CSA-Z614: 2134 mm
EN1176: 2134 mm



Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Install Horizontal Ladder.

Step 3: Install Horizontal Ladder. See **Detail A**. Select the horizontal Ladder, (4) four clamps, and the appropriate hardware. There are (4) four connections per clamp, (16) sixteen total connections. Raise the horizontal ladder onto the support posts at the desired height. See **Elevation Views**. Align clamps with the ladder and attach as shown.

Final Details.

Step 4: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

Step 5: Install drive rivets. See **Detail B**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.



ZZCH6936 - HORIZONTAL LADDER WITH PARALLEL BARS

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3-1/2" WIDE ALUMINUM	4
AOH0029	LADDER - 120" HORIZONTAL LADDER w/RAILS (CH)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RSTNT w/TORX DR	16





Attention: Owner

The Overhead Components are designed for hand over hand movement across the top rungs to foster play activity which combines upper body development, body control, hand eye coordination, and gripping ability.

Improper play and behavior on the Overhead Component can result in serious accidents. The following rules for the use of the component must be applied to reduce the possibility of debilitating injuries:

- Properly trained adult supervision is required at all times. The components are designed to accommodate children 5 through 12 years of age. Supervisors and parents should be aware of appropriate age and physical capabilities of the users.
- Do not crawl on, sit on, stand on or jump off the top of the assembly.
- Users must move in same direction across the length of the top of the component assembly. Always use fingers and thumbs for "Lock Grip" on hand rungs. Do not begin movement across the top hand rungs from opposite ends of the structure.
- Adequate distance, such as half the length of the ladder, must be maintained between users proceeding across the hand rung assembly.
- Be alert to swinging feet generated by body movement of participants using the apparatus.
- Do not use when hand rungs are wet as gripping capability is impaired. Use only when rungs are dry.

SUPERVISION INSTRUCTIONS

PLAYWORLD SYSTEMS® OVERHEAD COMPONENTS (SEE COMPONENT LISTING BELOW)

- Avoid speed contests or trying to cover too large a distance in one move.
- Drop from hand rungs with knees slightly bent and land on both feet.
- Protective surfacing material must be installed and maintained within the use zone of the Overhead Component in accordance with ASTM specification F1292 appropriate for the fall height of the Overhead Component .
- Review and familiarize warning document supplied with each Overhead Component shipment outlining owner's responsibilities on provided and maintaining required impact absorbing surfacing material.

As the owner of this playground equipment, you are responsible for communicating proper usage to those who may play on it.

Playworld Systems accepts NO responsibility for improper use.

Overhead Components include:

- Horizontal Ladders
- Horizontal Hand Over Hand Ladders
- Horizontal Loop Rung Ladders
- Under Catwalk Hand Over Hand
- Under Catwalk Loop Rung Ladder
- Sky Link
- Sky Arch
- Unity Overhead Canopy

SUPERVISION INSTRUCTIONS



Movement Must Be In Same Direction With Adequate Distance Between Users



Do Not Begin Movement From Opposite Directions



Do Not Use When Hand Rungs Are Wet



Do Not Crawl Or Sit On Top Of The Hand Over Hand Ladder



Do Not Stand On Or Jump Off Top Of The Hand Over Hand Ladder

Overhead Component shown is for example only. May not be the component ordered.



Assembly View

Installation Instructions

Challengers® Model CH6966

120 in. (3048 mm)

Roundabout Horizontal Ladder

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 1.5 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

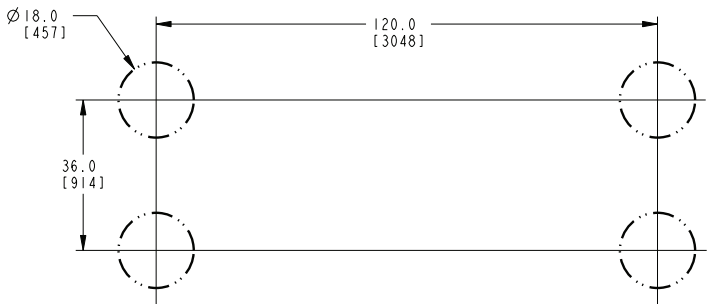
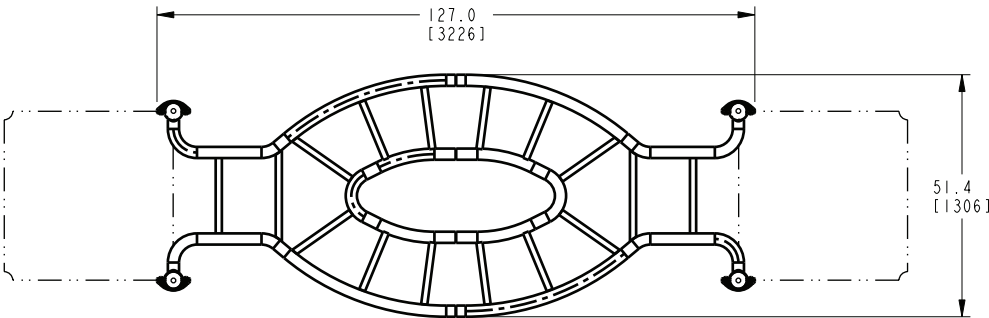
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

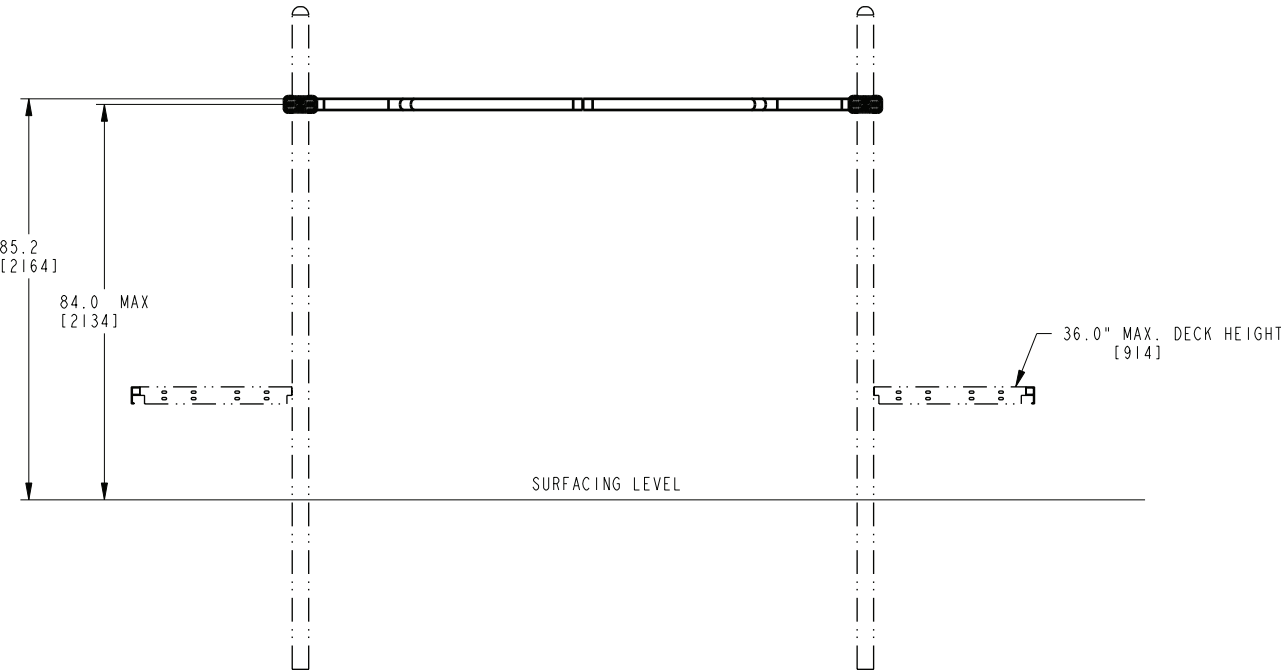
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

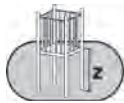
Top View



Footing Diagram



Elevation View

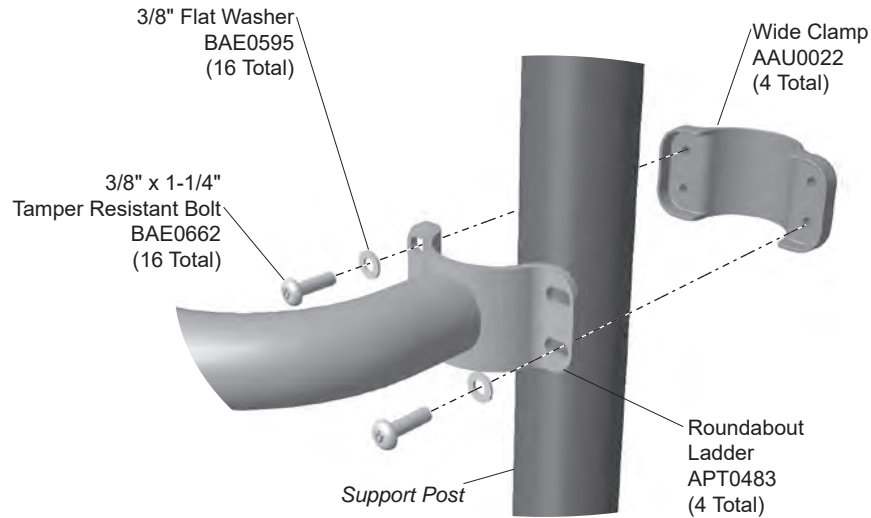


ASTM F1487: 84" (2134 mm)
CSA-Z614: 2134 mm
EN1176: 2134 mm

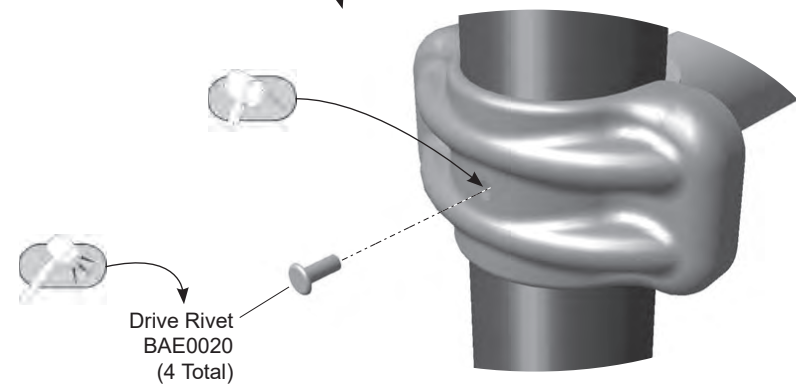
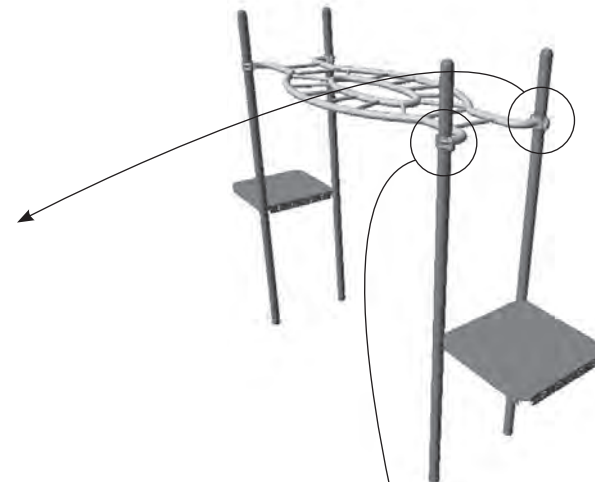


Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Detail A
Step 4 
Attach the ladder to the support posts.



Detail B
Step 7
Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine location of the component by referring to the master plan view.

Step 4: Attach the ladder to the support posts. See **Detail A** and **Elevation View**. Position the ladder between the support posts at the approximate height. Place each clamp around the post and against the ends of the ladder. Attach as shown. Start all bolts before tightening any.

Step 5: Adjust height of the assembly. See **Elevation View**. Adjust the height of the top rail so that the center of the clamp band is 84 in. (2134 mm) above the level of protective surfacing. Tighten the bolts *evenly* so that any gap is covered by the clamp casting.

Final Details.

Step 6: Plumb and level the entire component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications: Bolts & Nuts - Snug tighten and then tighten an additional half turn.

Step 7: Install the drive rivets. See **Detail B**. After the equipment assembly is complete, install a drive rivet in each clamp band to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp band and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 8: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.



CH6966 - 120 in. (3048 mm) ROUNDABOUT HORIZONTAL LADDER

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3-1/2" WIDE ALUMINUM	4
APT0483	ROUNDABOUT LADDER - CH	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RESISTANT w/TORX DRIVE	16
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



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Assembly View (representative model)

Model	Deck Height
ZZCH7160	72" (1830 mm)
ZZCH7166	84" (2134 mm)
ZZCH7167	96" (2743 mm)

Installation Instructions

Challengers® Models CH7160,
CH7166, and CH7167

Twisted Climber

6 ft. (1829 mm), 7 ft. (2134 mm), and 8 ft. (2438 mm)

Installation Preparation

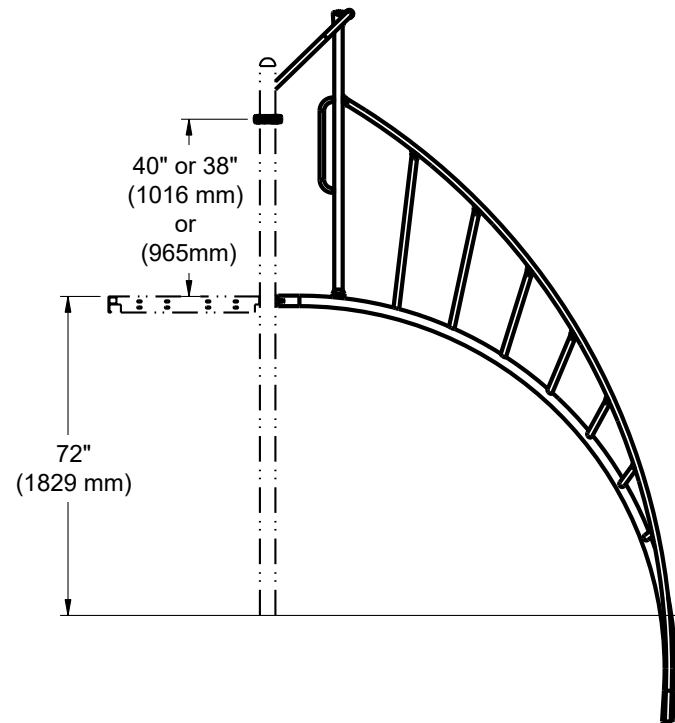
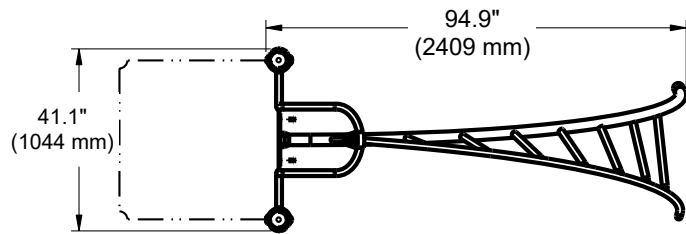
Recommended Crew: Two (2) adults
 Installation Time: 2 installation-hours
 Concrete Required: 0.6 cubic yard (0,4 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

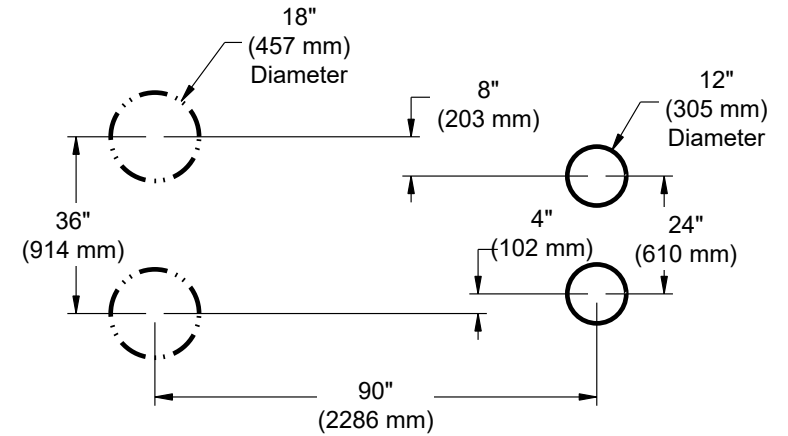
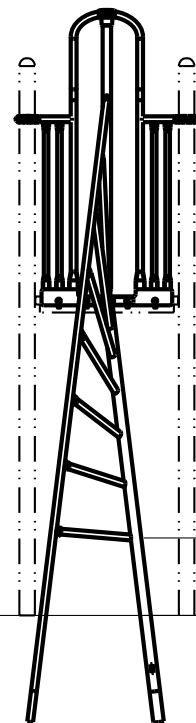
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Top View



Elevation Views
ZZCH7160



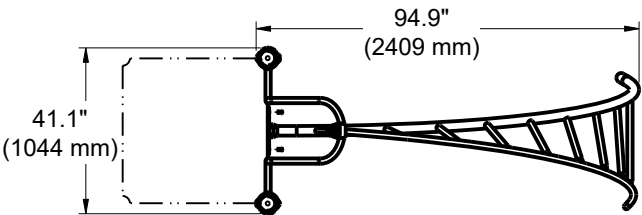
Footing Diagram
All Models



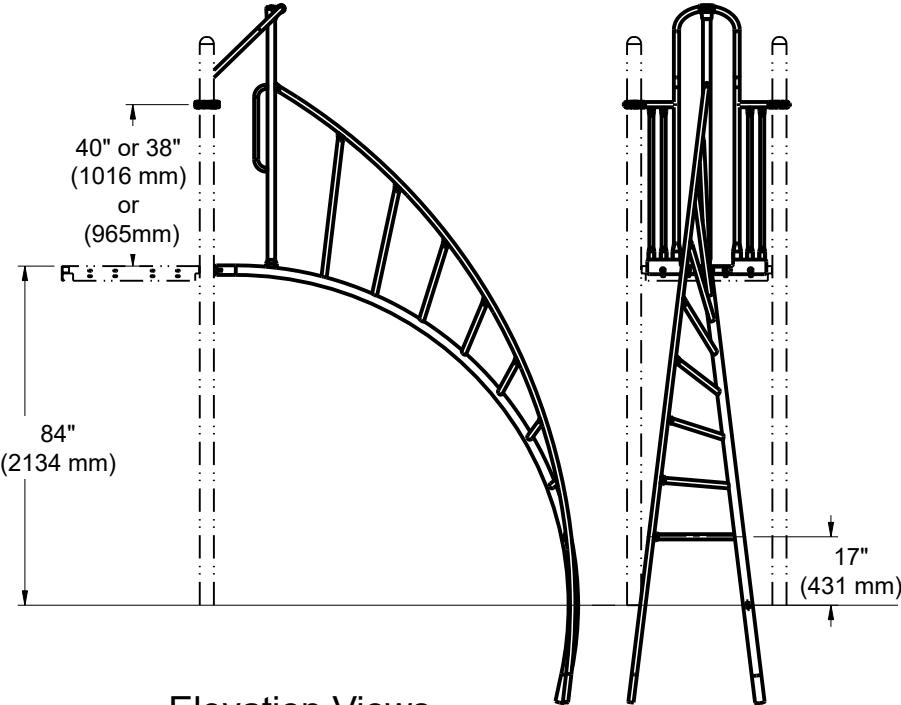
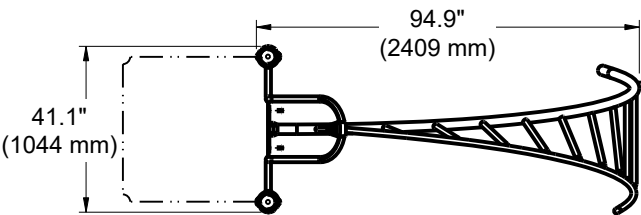
ASTM F1487: 72" (1829 mm)
CSA-Z614: 1829 mm
EN1176: 1829 mm

Installation Instructions

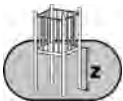
Top View



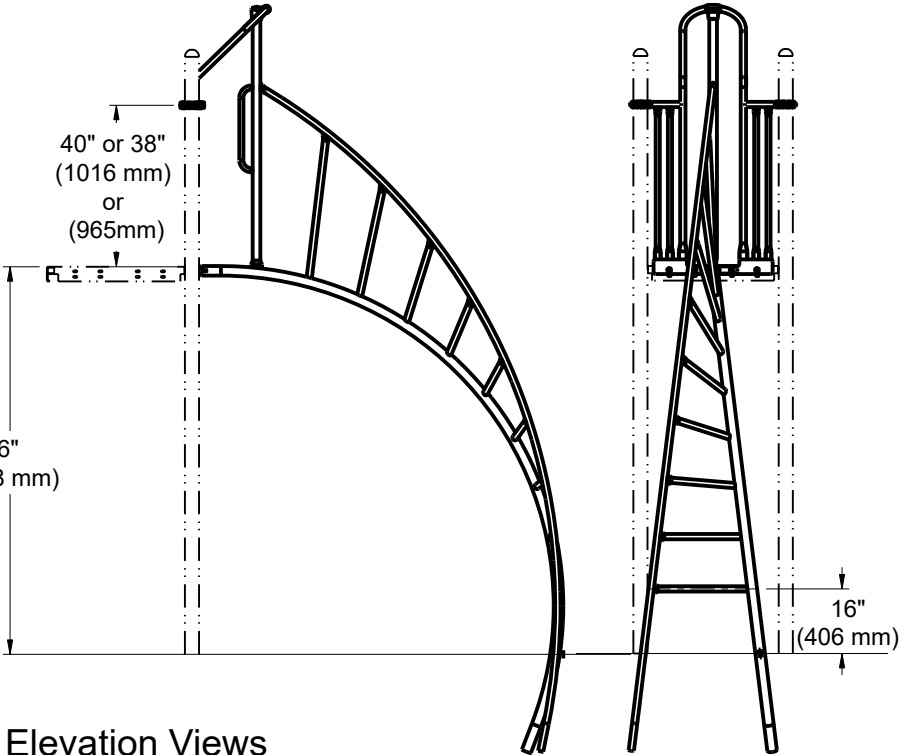
Top View



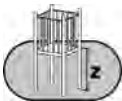
Elevation Views
ZZCH7166



ASTM F1487: 84" (2134 mm)
CSA-Z614: 2134 mm
EN1176: 2134 mm



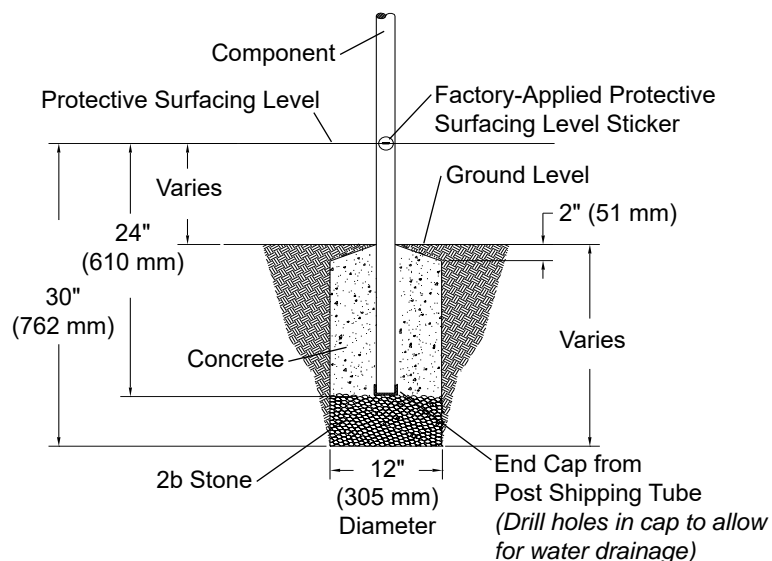
Elevation Views
ZZCH7167



ASTM F1487: 96" (2438 mm)
CSA-Z614: 2438 mm
EN1176: 2438 mm



Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

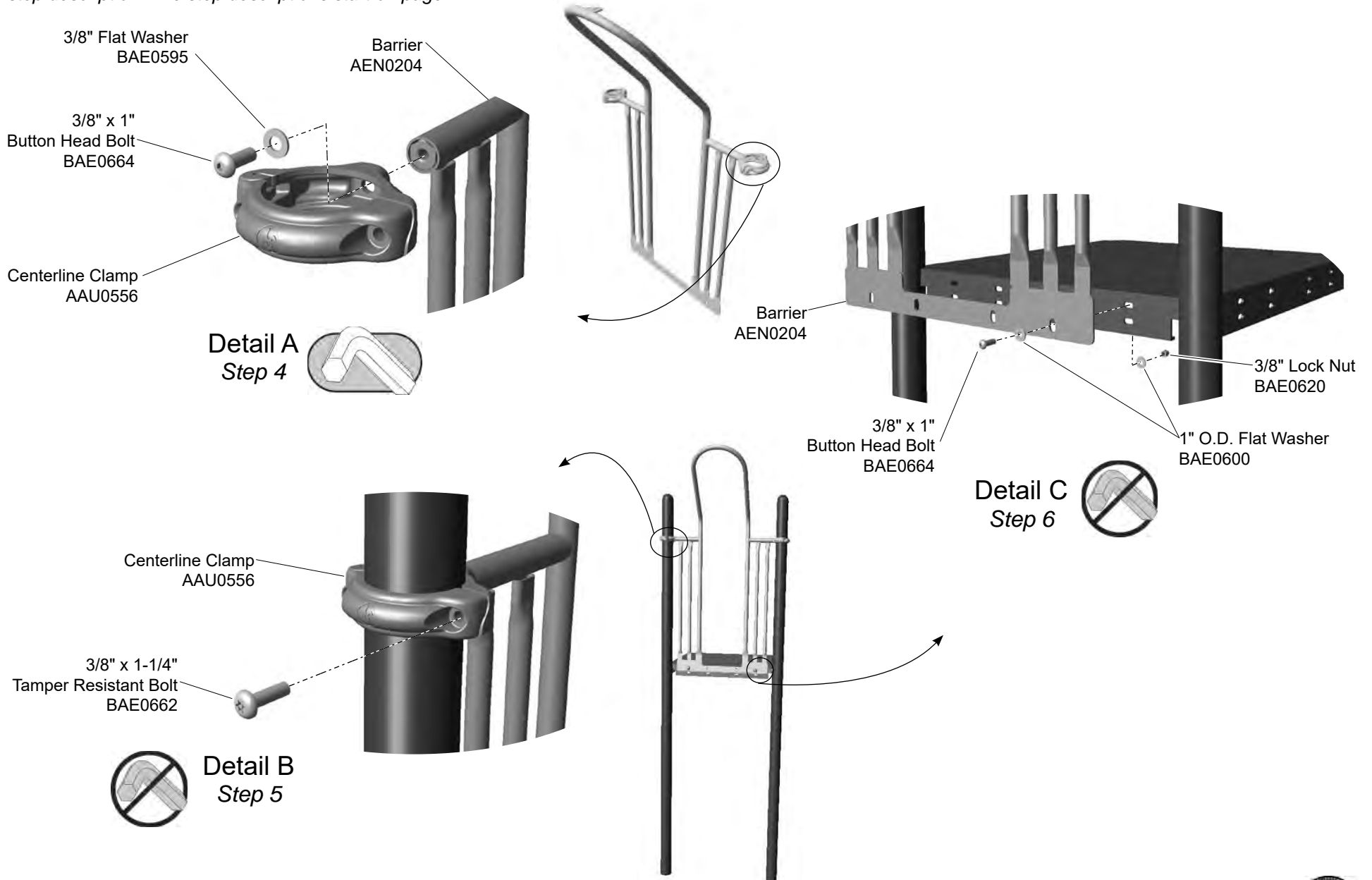
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

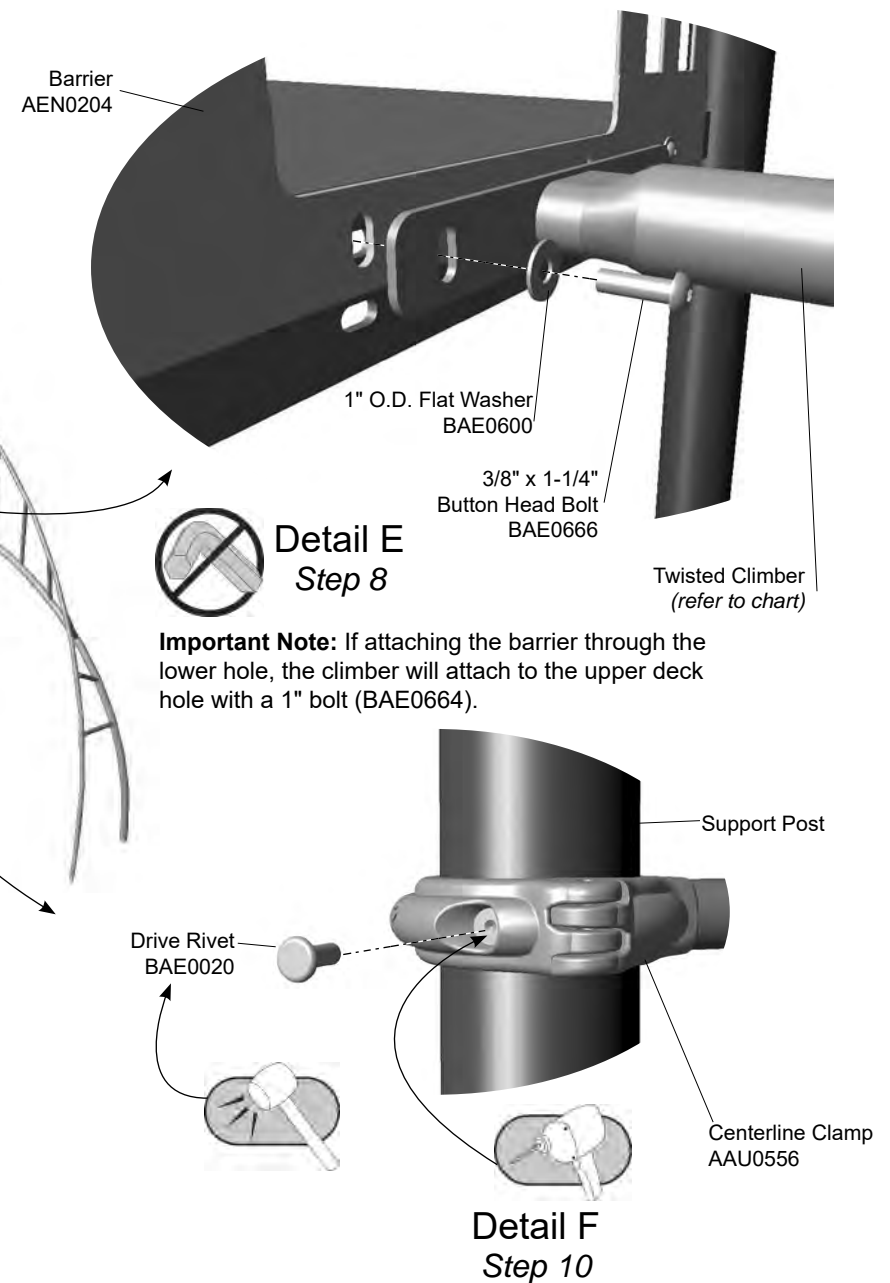
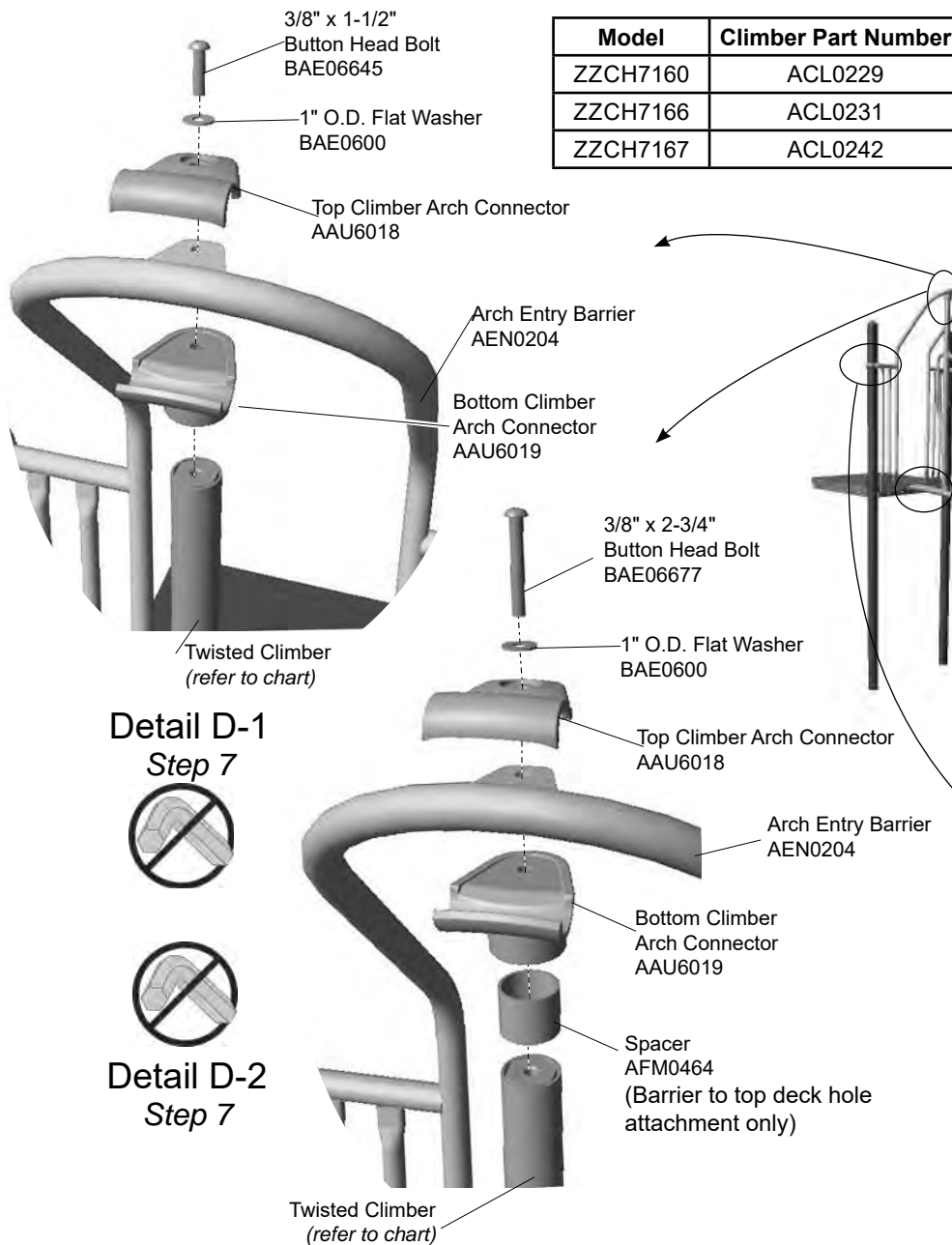
- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Installation Instructions



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Component Footing Details** in the *Challenger Guidelines* and on page 4 of this installation document.

Attach the clamps to the arch entry barrier.

__Step 4: Attach the clamps to the barrier. See **Detail A**. Select the arch entry barrier, centerline clamps, and the appropriate hardware. There are (2) two connections. Position the neck of each clamp against an end of the barrier top rail and align holes. Attach as shown. Turn the clamp so that the hinge faces away from the entry, and fully tighten bolt.

Attach the clamps to the support posts.

__Step 5: Attach the clamps to the posts. See **Detail B**. Select the appropriate hardware. There are (2) two connections. Lift the barrier into position against deck and close the clamps around the posts. Insert and thread each bolt into a clamp. Leave the clamp connection loose for deck connection adjustments.

Attach the barrier to the deck.

__Step 6: Attach the barrier to the deck. See **Detail C**. Select the appropriate hardware. There are (2) two connections. *Attach only the outside holes*. The barrier can be attached to either the *upper* or *lower* deck holes to avoid conflicts with adjacent clamps. Attach as shown.

Note: The upper or lower deck attachment will effect connections in **Step 7**.

Attach the climber to the barrier.

__Step 7: Attach the climber to the top of the barrier. See **Details D-1 and D-2**. Select the climber, the top and bottom climber connectors, the spacer, and the appropriate hardware. There is (1) one connection. Place the climber into the excavated footing. Align the climber with the holes in the barrier. If the barrier is mounted to the lower deck holes, *do not use the spacer*. Refer to **Detail D-1**. If the barrier is mounted in the *upper* set of deck holes, *use the spacer as shown*. Refer to **Detail D-2**. Do not fully tighten the connection.

__Step 8: Attach the climber to the barrier/deck. See **Detail E**. Select the appropriate hardware. There are (2) two connections. Align the climber with the holes in the barrier. Attach as shown.

Important Note: If the barrier is attached through the lower hole in **Step 6**, the climber will attach to the upper deck hole with a 1" bolt (BAE0664).

Final Details.

__Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7160 - 6 ft. (1829 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0229	CLIMBER - 6' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7167 - 8 ft. (2438 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0242	CLIMBER - 8' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7166 - 7 ft. (2134 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0231	CLIMBER - 7' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1





Assembly View (representative model)

Model	Deck Height
ZZCH7948	24" (610 mm)
ZZCH7949	36" (915 mm)
ZZCH7950	48" (1220 mm)
ZZCH7956	60" (1525 mm)
ZZCH7957	72" (1830 mm)

Installation Instructions

Challengers[®] Models CH7948, CH7949,
CH7950, CH7956, and CH7957


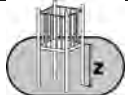




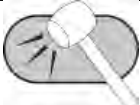
Silo Climber

24 in (610 mm), 36 in (914 mm), 48 in (1219 mm),
60 in (1524 mm), 72 in (1829 mm) Deck

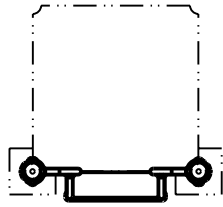
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Concrete Required: 0.06 cubic yard (0,04 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

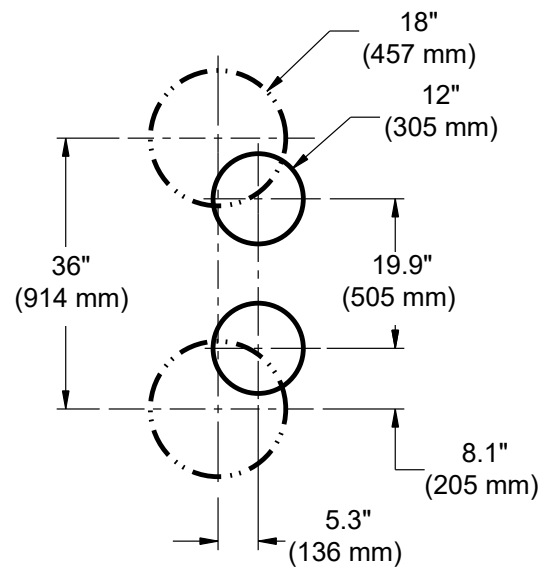
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

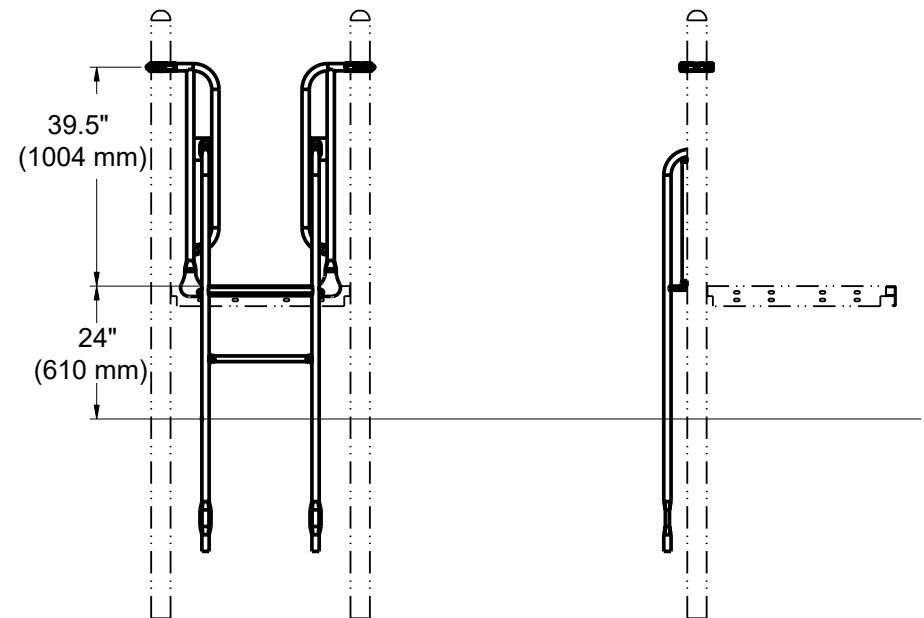
Installation Instructions



Top View
(All Models)



Footing Diagram
(All Models)

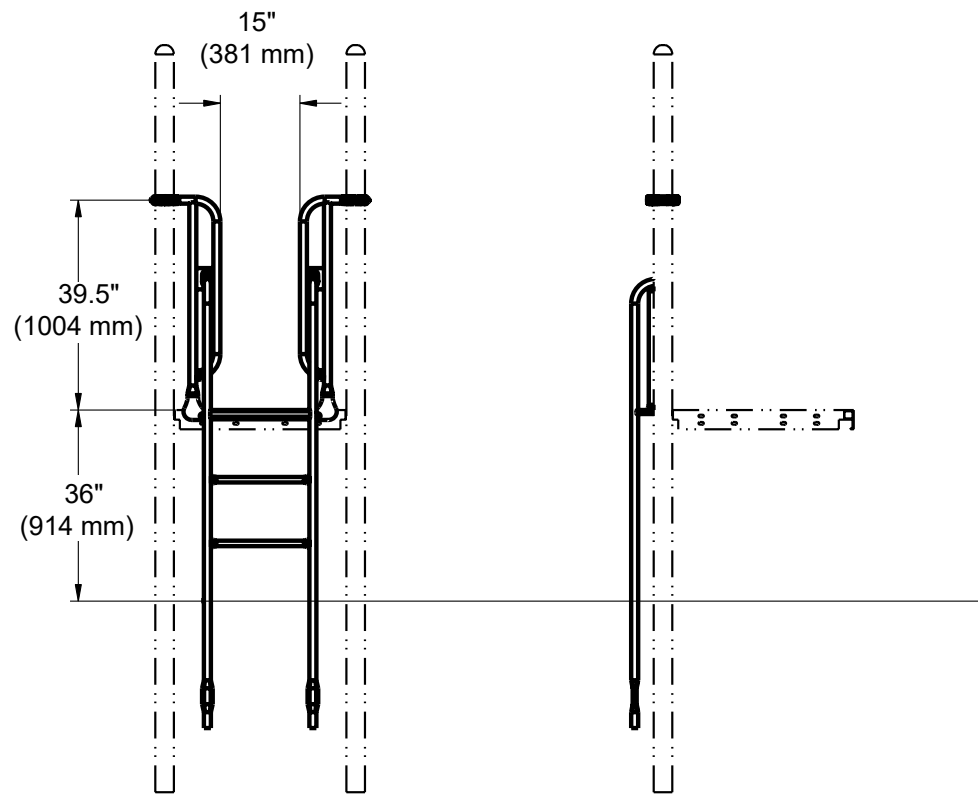


Elevation Views
CH7948

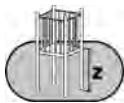


ASTM F1487: 24" (610 mm)
CSA-Z614: 610 mm
EN1176: 610 mm

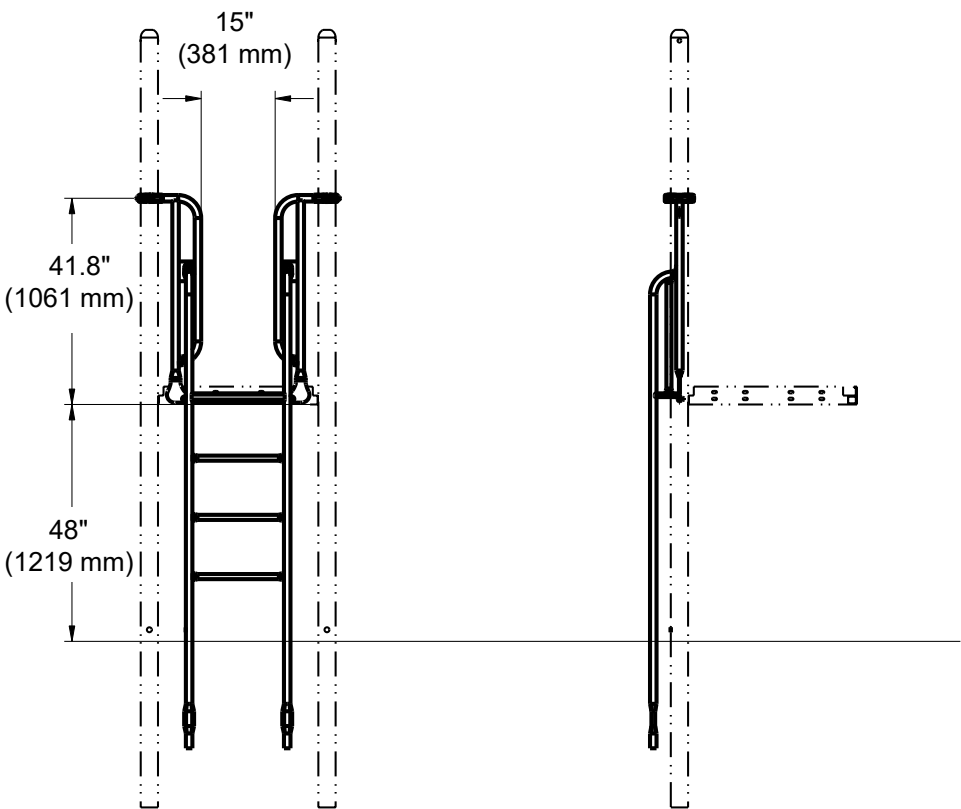
Installation Instructions



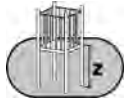
Elevation Views
CH7949



ASTM F1487: 36" (914 mm)
CSA-Z614: 914 mm
EN1176: 914 mm



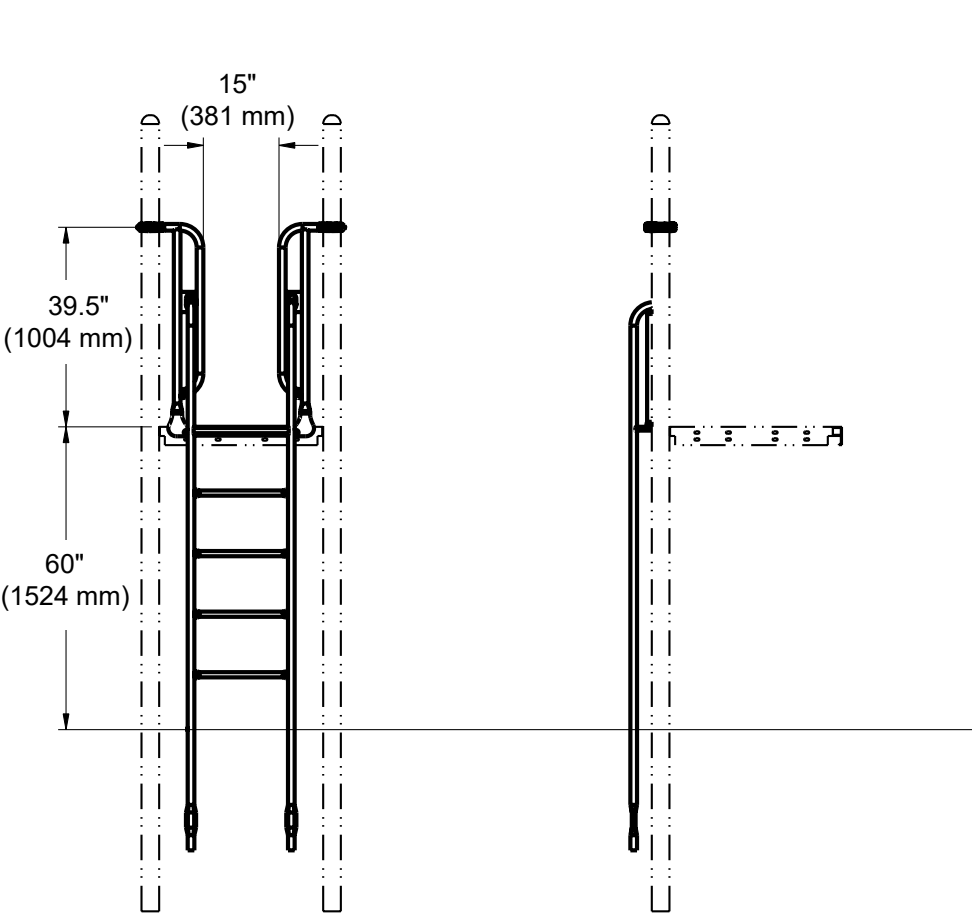
Elevation Views
CH7950



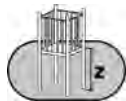
ASTM F1487: 48" (1219 mm)
CSA-Z614: 1219 mm
EN1176: 1219 mm



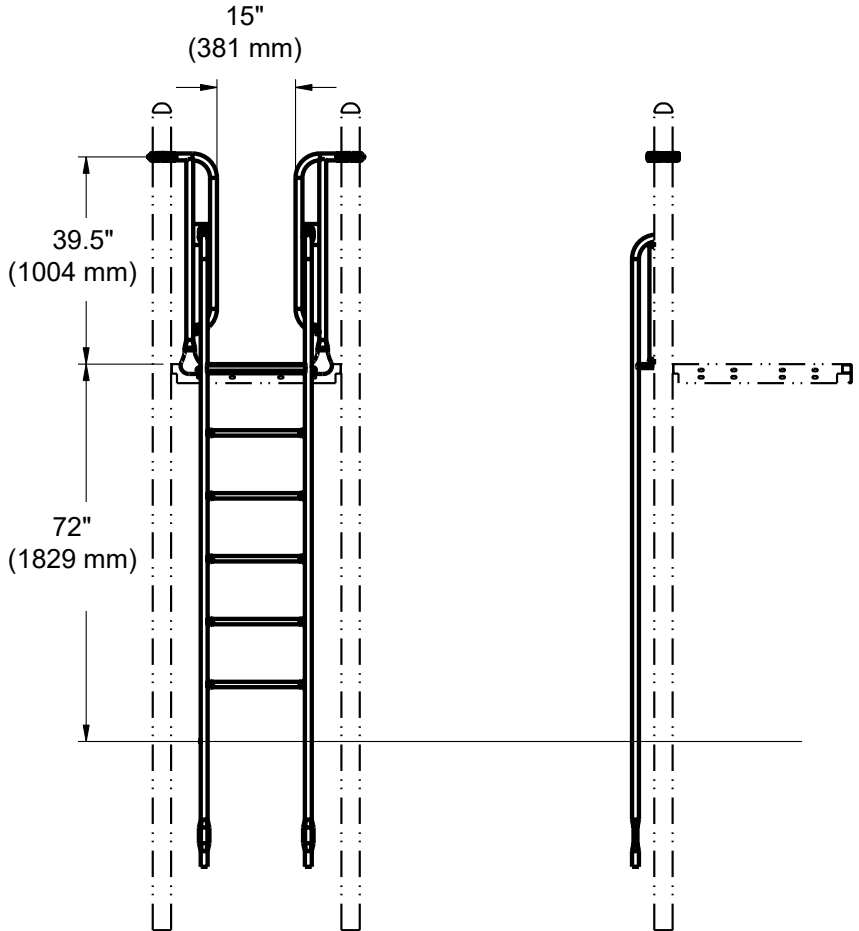
Installation Instructions



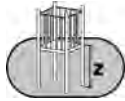
Elevation Views
CH7956



ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm

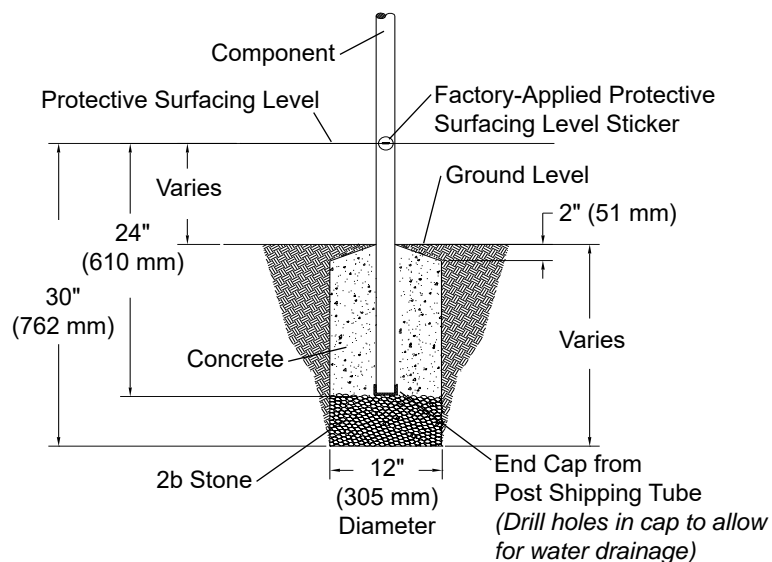


Elevation Views
CH7957



ASTM F1487: 72" (1829 mm)
CSA-Z614: 1829 mm
EN1176: 1829 mm

Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

For example:

- If local soil is loose or unstable, a larger footing may be required.

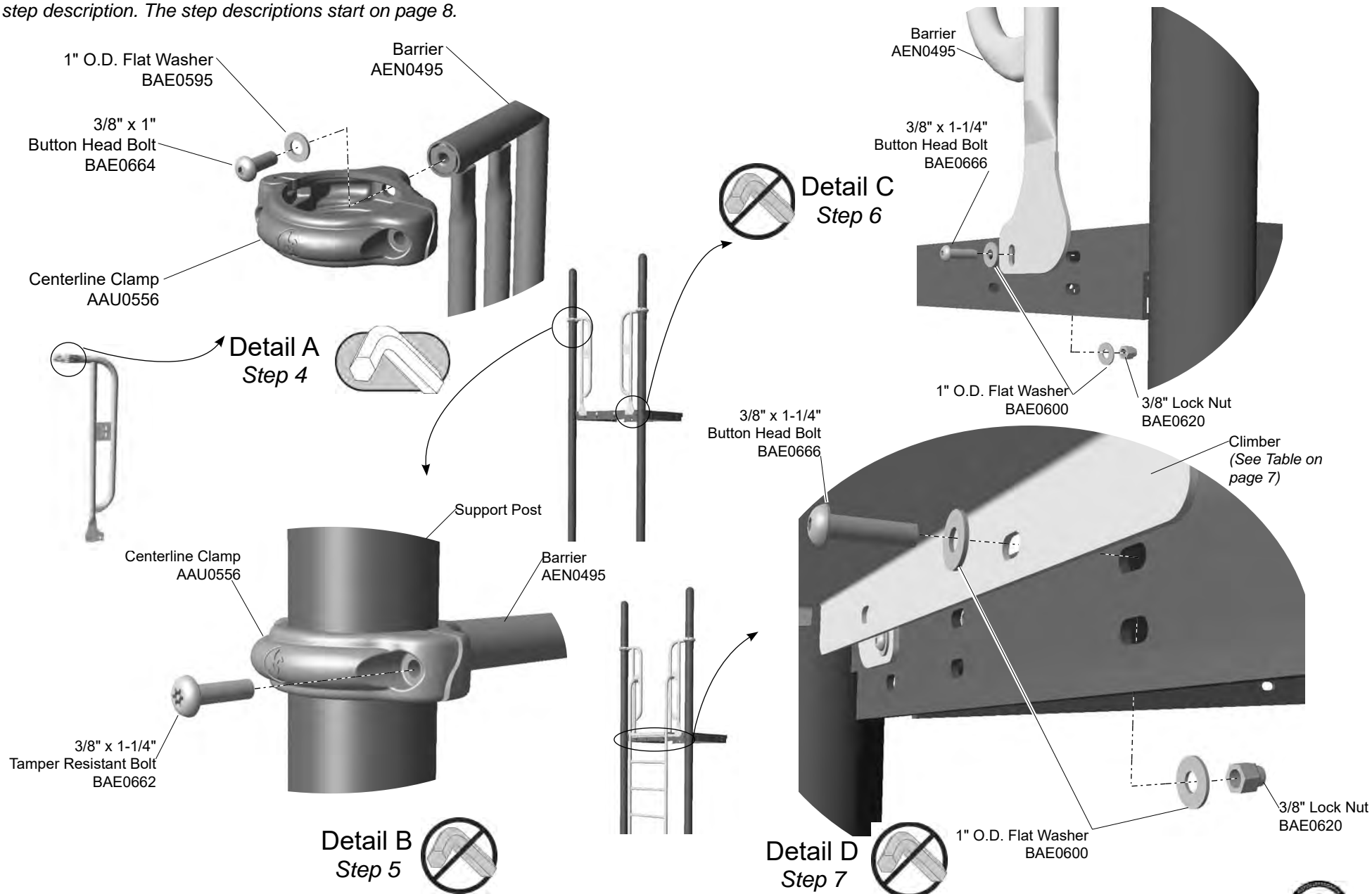
- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

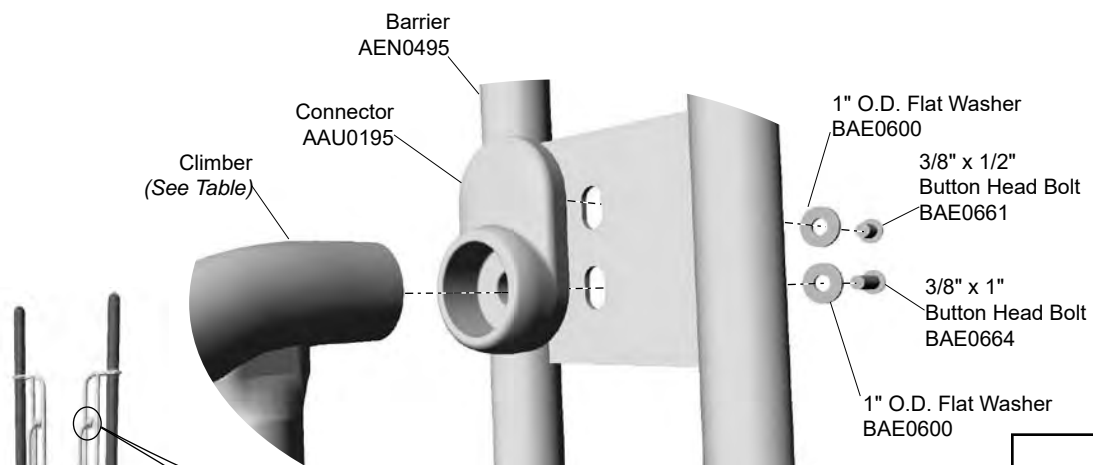
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 8.

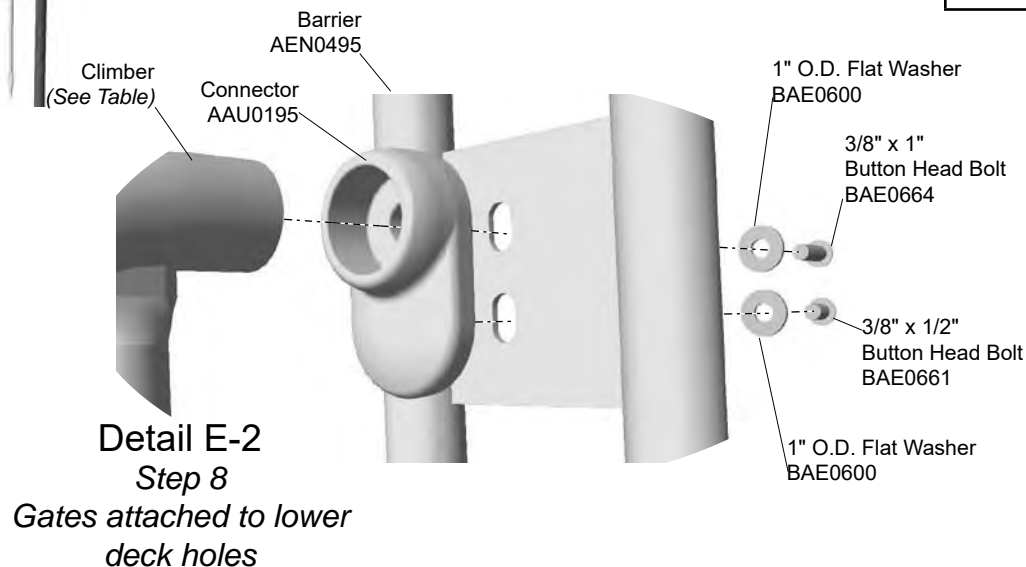


Installation Instructions



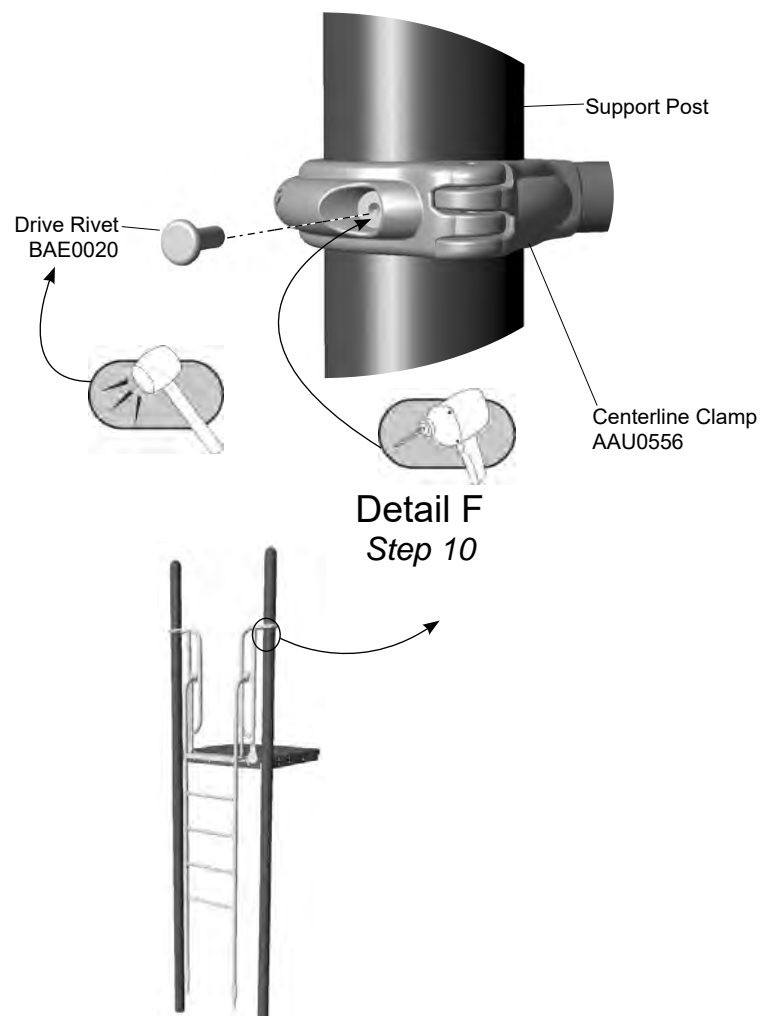
Detail E-1
Step 8
*Gates attached to upper
deck holes*

Model	Part Number	Deck Height
ZZCH7948	ACL0219	24" (610 mm)
ZZCH7949	ACL0220	36" (915 mm)
ZZCH7950	ACL0222	48" (1220 mm)
ZZCH7956	ACL0224	60" (1525 mm)
ZZCH7957	ACL0226	72" (1830 mm)



Detail E-2
Step 8
*Gates attached to lower
deck holes*

Installation Instructions



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Component Footing Details** in the Guidelines and on page 5 of this installation document.

Attach the clamps to the barrier gates.

__Step 4: Attach the clamps to the barrier gates. See **Detail A**. Select both barrier gates and (2) two clamps, and the appropriate hardware. Position the top of each barrier against the neck of the clamp and make the connection as shown. Fully tighten connections.

Attach the clamps to the support posts.

__Step 5: Attach the clamps to the support posts. See **Detail B**. Select (2) two 3/8" x 1-1/4" tamper resistant bolts. Lift each barrier gate into position against the deck and attach each clamp to the support post as shown. Leave the connections loose. The location of the clamp may need to be changed.

Attach the barrier gates to the deck.

__Step 6: Attach the barrier gates to the deck. See **Detail C**. Select the appropriate hardware. There are (2) two connections. Align the barrier gates with either the *top* or the *bottom* holes of the deck.

Note: The connectors are adjusted according the the barrier gate location. See **Detail E-1** and **Detail E-2**.

Attach the silo climber to the deck.

__Step 7: Attach the silo climber to the deck. See **Detail D**. Select the appropriate hardware. There are (2) two connections. Place the silo climber onto the prepared footings. Align the silo climber with the *top* deck holes.

Important Note: The top step plate of the silo climber **must** be flush with the top surface of the adjoining deck.

Attach the silo climber to the barrier gate.

__Step 8: Attach the silo climber to the barrier gate. See **Detail E-1** and **Detail E-2**. Select (2) two connectors and the appropriate hardware. There are (4) four connections. **Note:** The connectors are adjusted according the the barrier gate location.

Final Details.

__Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7948 - 24 in (610 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0219	CLIMBER - 24" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7949 - 36 in (914 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0220	CLIMBER - 36" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7950 - 48 in (1219 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0222	CLIMBER - 48" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DR	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7956 - 60 in (1524 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0224	CLIMBER - 60" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7957 - 72 in (1829 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0226	CLIMBER - 72" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4



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Attention: Owner

The Overhead Components are designed for hand over hand movement across the top rungs to foster play activity which combines upper body development, body control, hand eye coordination, and gripping ability.

Improper play and behavior on the Overhead Component can result in serious accidents. The following rules for the use of the component must be applied to reduce the possibility of debilitating injuries:

- Properly trained adult supervision is required at all times. The components are designed to accommodate children 5 through 12 years of age. Supervisors and parents should be aware of appropriate age and physical capabilities of the users.
- Do not crawl on, sit on, stand on or jump off the top of the assembly.
- Users must move in same direction across the length of the top of the component assembly. Always use fingers and thumbs for "Lock Grip" on hand rungs. Do not begin movement across the top hand rungs from opposite ends of the structure.
- Adequate distance, such as half the length of the ladder, must be maintained between users proceeding across the hand rung assembly.
- Be alert to swinging feet generated by body movement of participants using the apparatus.
- Do not use when hand rungs are wet as gripping capability is impaired. Use only when rungs are dry.

SUPERVISION INSTRUCTIONS

PLAYWORLD SYSTEMS® OVERHEAD COMPONENTS (SEE COMPONENT LISTING BELOW)

- Avoid speed contests or trying to cover too large a distance in one move.
- Drop from hand rungs with knees slightly bent and land on both feet.
- Protective surfacing material must be installed and maintained within the use zone of the Overhead Component in accordance with ASTM specification F1292 appropriate for the fall height of the Overhead Component .
- Review and familiarize warning document supplied with each Overhead Component shipment outlining owner's responsibilities on provided and maintaining required impact absorbing surfacing material.

As the owner of this playground equipment, you are responsible for communicating proper usage to those who may play on it.

Playworld Systems accepts NO responsibility for improper use.

Overhead Components include:

- Horizontal Ladders
- Horizontal Hand Over Hand Ladders
- Horizontal Loop Rung Ladders
- Under Catwalk Hand Over Hand
- Under Catwalk Loop Rung Ladder
- Sky Link
- Sky Arch
- Unity Overhead Canopy

SUPERVISION INSTRUCTIONS



Movement Must Be In Same Direction With Adequate Distance Between Users



Do Not Begin Movement From Opposite Directions



Do Not Use When Hand Rungs Are Wet



Do Not Crawl Or Sit On Top Of The Hand Over Hand Ladder



Do Not Stand On Or Jump Off Top Of The Hand Over Hand Ladder

Overhead Component shown is for example only. May not be the component ordered.



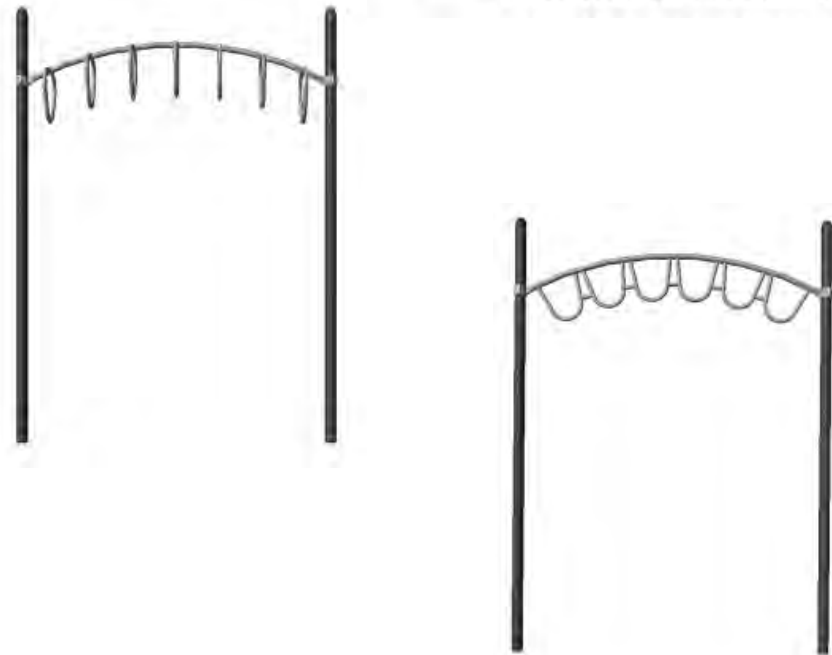
Installation Instructions

Challengers® Models CH8450 & CH8456

The Sky Link & The Sky Arch

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 0.5 installation-hours
 Use Zone:..... Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14



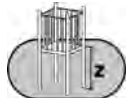
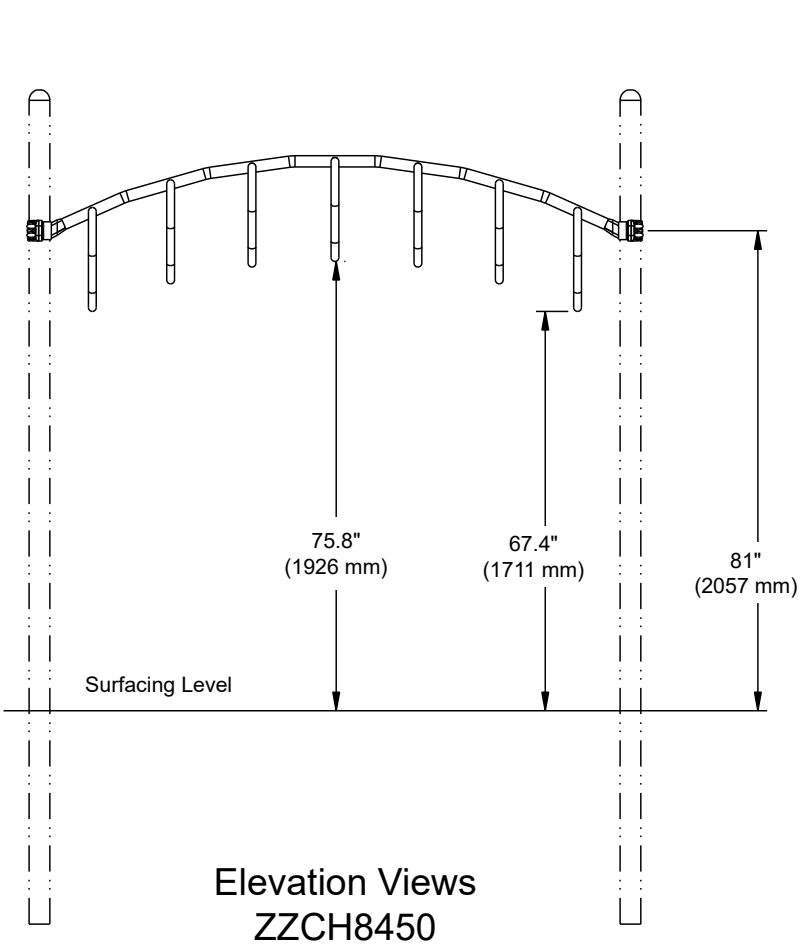
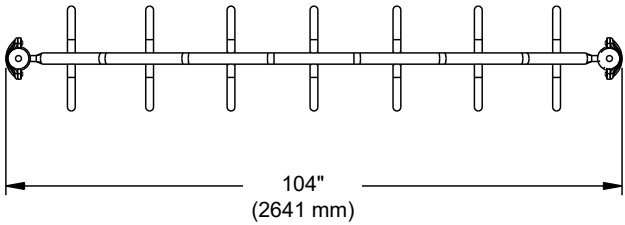
Assembly View (*representative model*)

Model	Name
ZZCH8450	The Sky Link
ZZCH8456	The Sky Arch

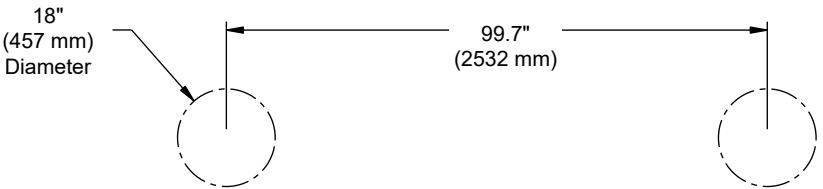
ICON KEY			
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Top View



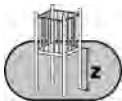
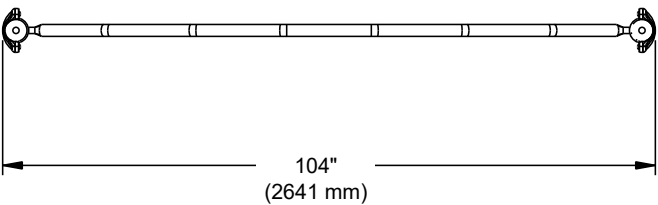
ASTM F1487: 94" (2388 mm)
CSA-Z614: 2388 mm
EN1176: 1926 mm



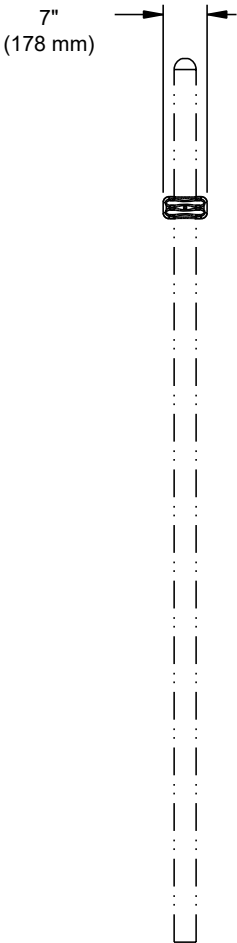
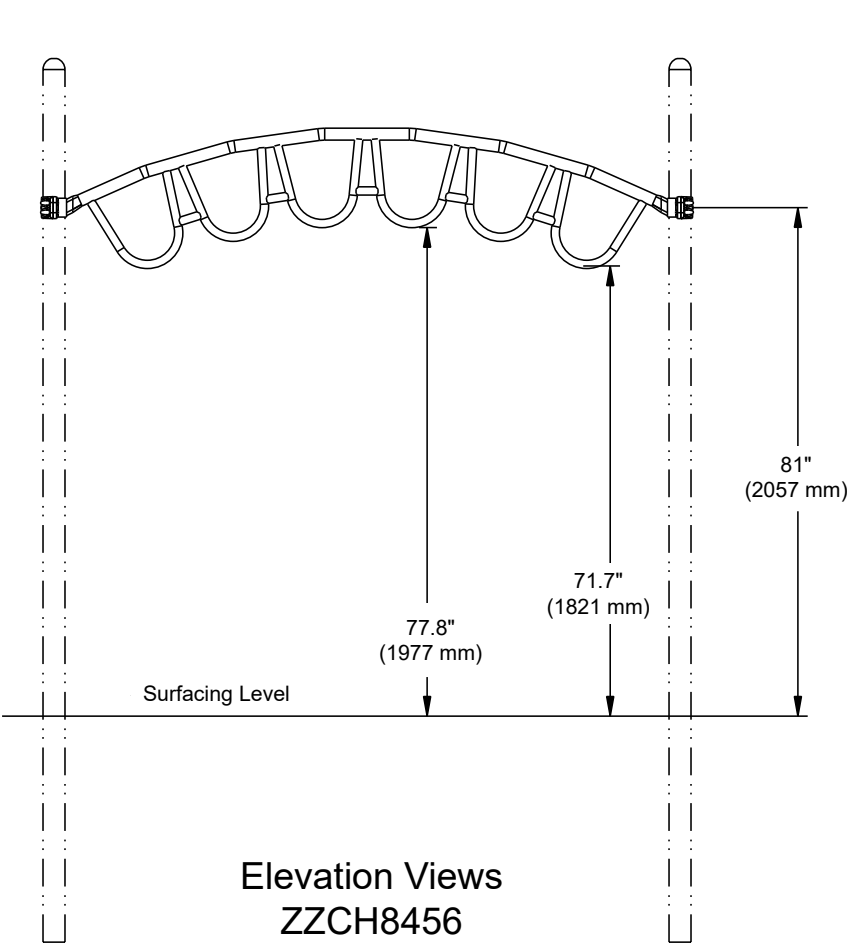
Footing Diagram
Both Models

Installation Instructions

Top View

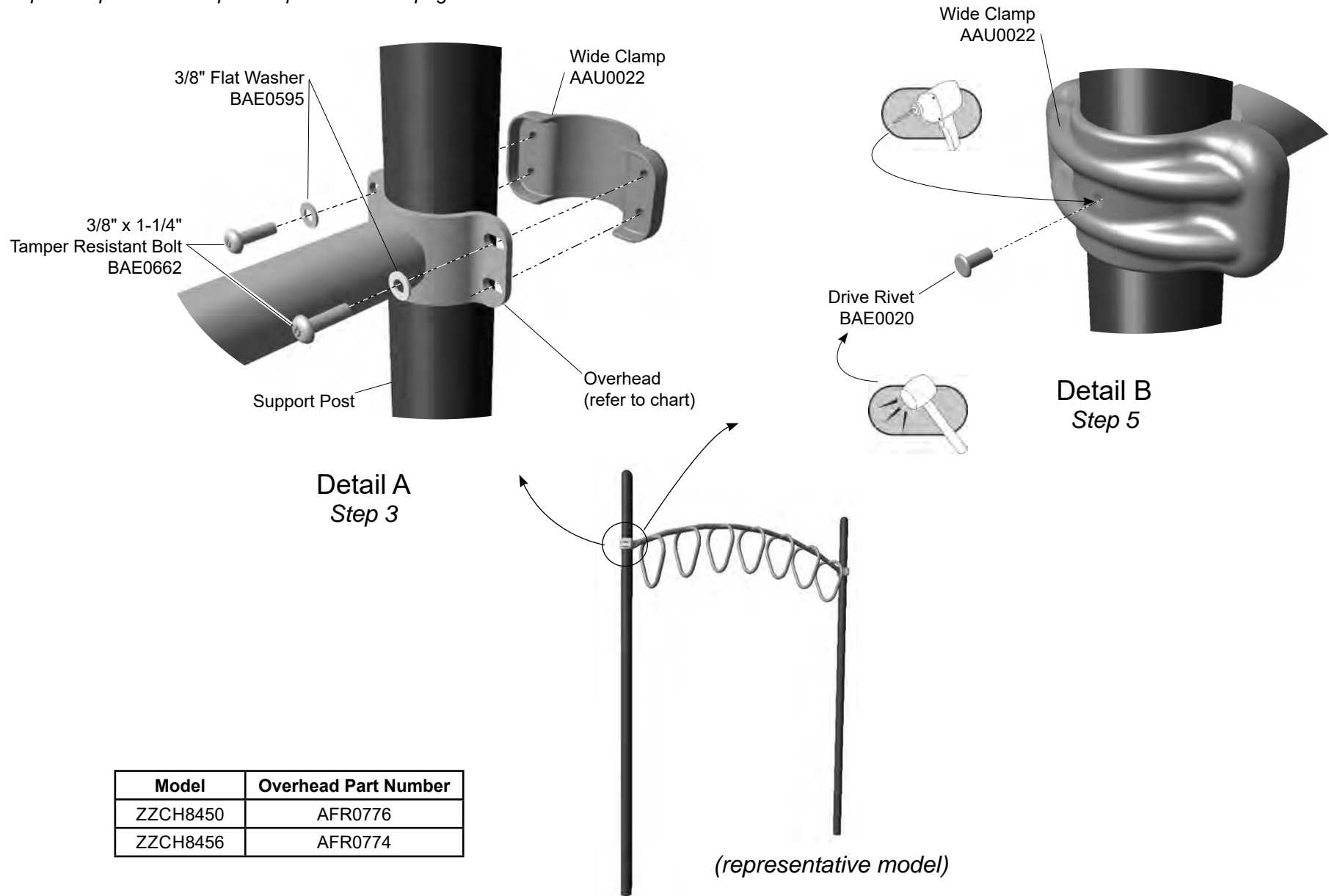


ASTM F1487: 94" (2388 mm)
CSA-Z614: 2388 mm
EN1176: 1926 mm



Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Model	Overhead Part Number
ZZCH8450	AFR0776
ZZCH8456	AFR0774

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Attach the overhead to the support posts.

Step 3: See **Detail A**. Select the overhead, the clamp, and the appropriate hardware. There are (8) eight connections. Lift the overhead to the appropriate height. Attach as shown.

Final Details.

Step 4: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 5: Install drive rivets. See **Detail B**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH8450 - THE SKY LINK

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3-1/2" WIDE ALUMINUM	2
AFR0776	OVERHEAD - ADVENTURE SERIES BACKBONE (CH)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	8

CH8456 - THE SKY ARCH

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3-1/2" WIDE ALUMINUM	2
AFR0774	OVERHEAD - ADVENTURE SERIES LOOP (CH)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	8



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Assembly View (representative model)

Installation Instructions

Challengers®

Models CH9168, CH9170 and CH9177
Deck to Deck Accessible Tiered Platform
12 in. (305 mm), 24 in. (610 mm) and
36" (914 mm) Rise Height

Installation Preparation

Recommended Crew: Two - Three (2-3) adults
Installation Time: 2 man-hours
Use Zone:..... Refer to Master Drawing
User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

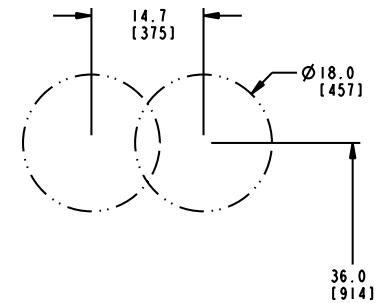
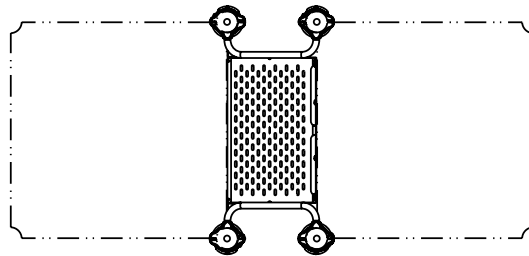
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

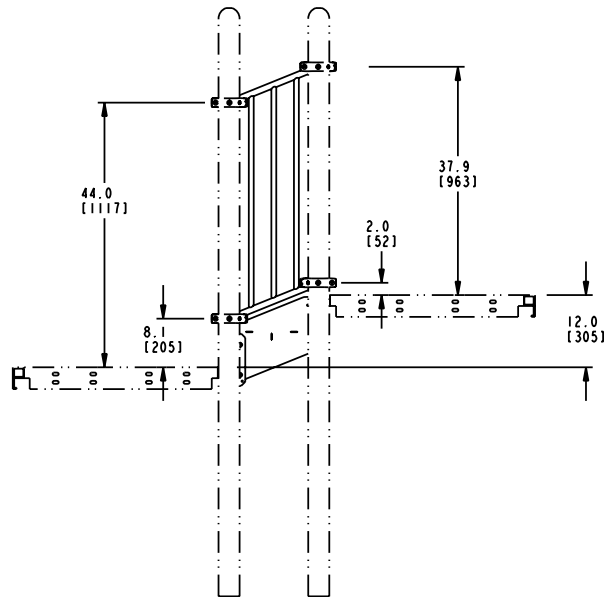
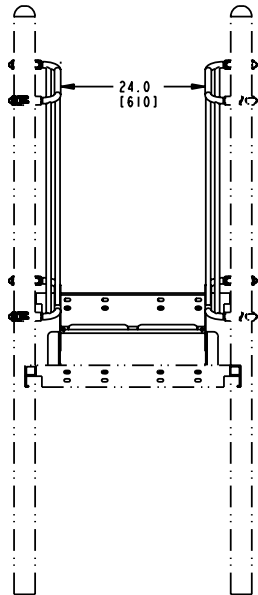
KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram



Elevation Views
CH9168

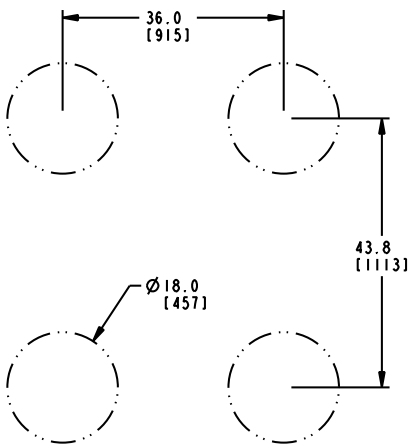
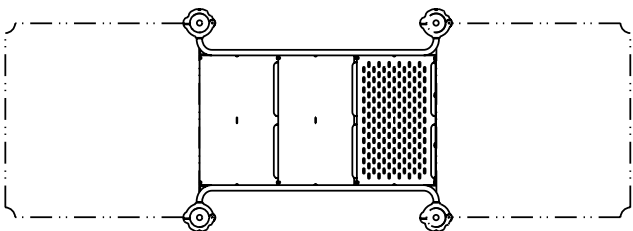


Height of the upper deck
minus 6" (152 mm)

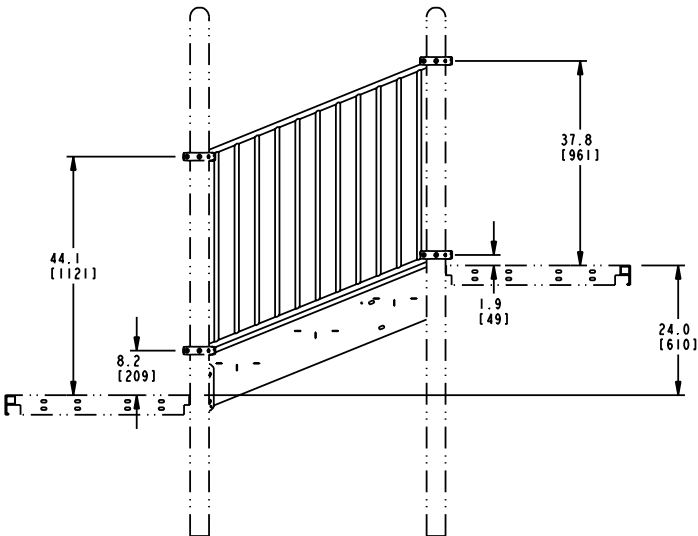
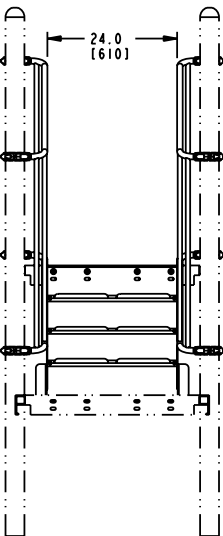
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

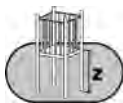
Top View



Footing Diagram



Elevation Views
CH9170



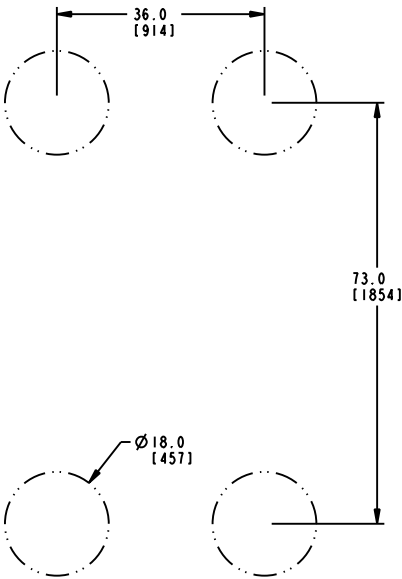
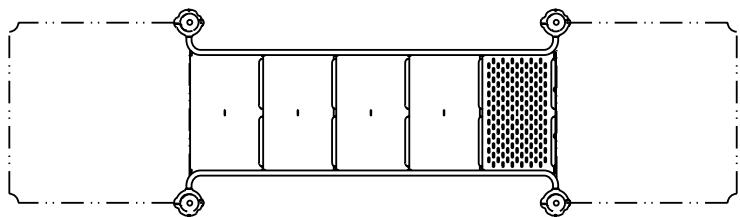
Height of the upper deck
minus 6" (152 mm)



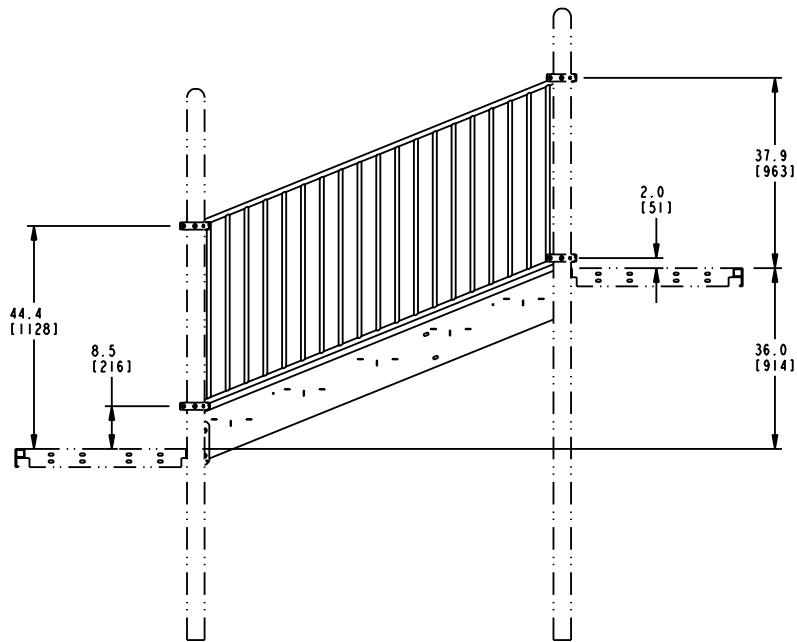
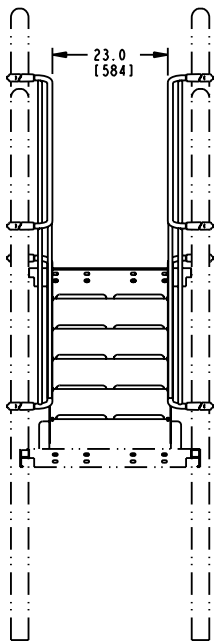
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

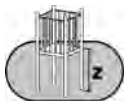
Top View



Footing Diagram



Elevation Views
CH9177

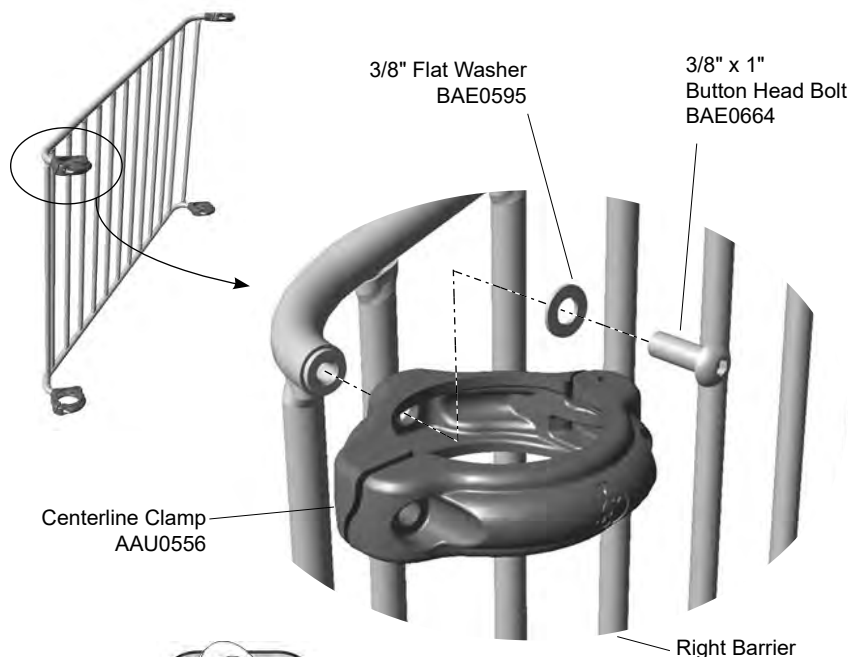


Height of the upper deck
minus 6" (152 mm)



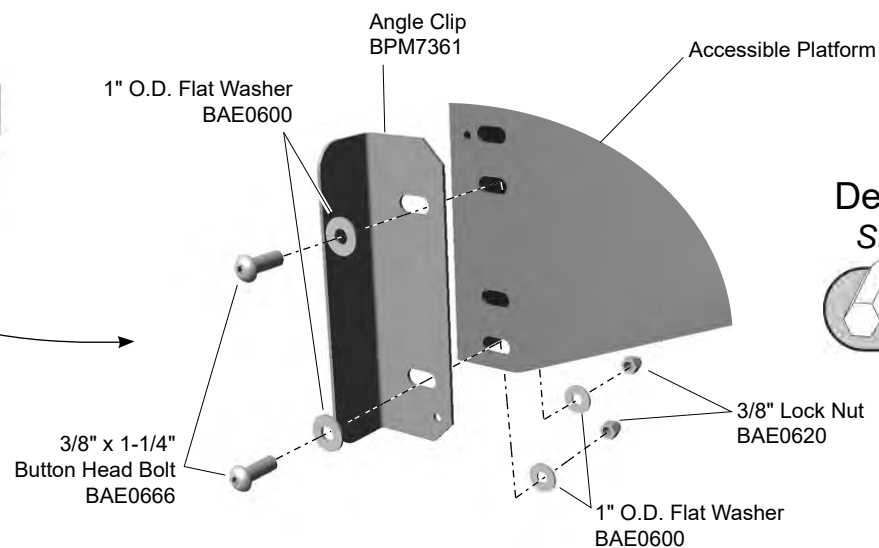
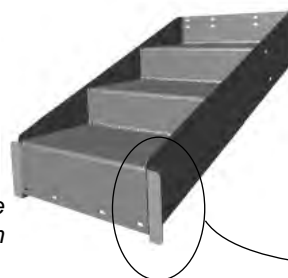
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Detail A
Step 4

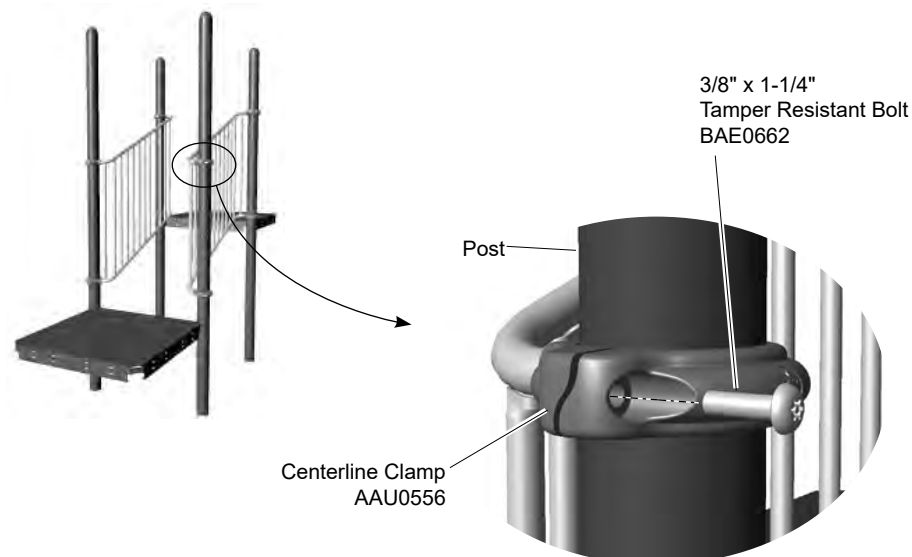
The front of angle clip should be even with the face of the platform



Detail C
Step 6



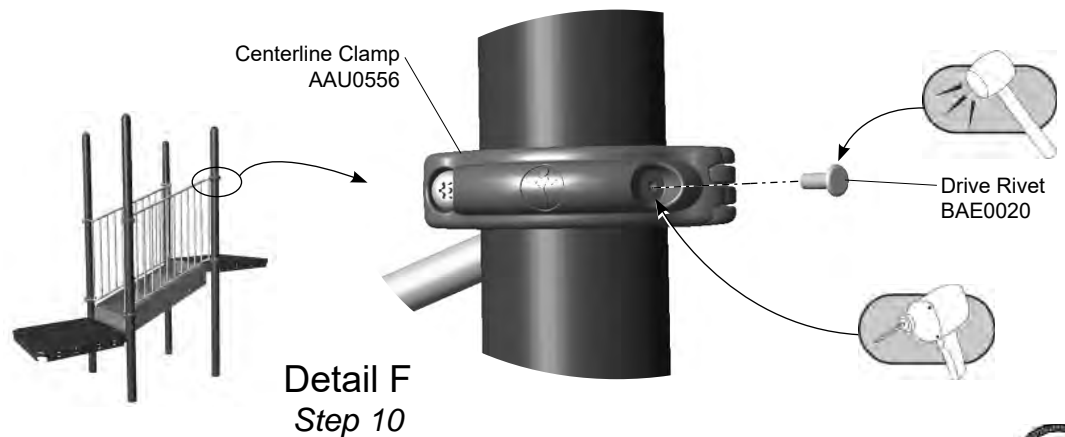
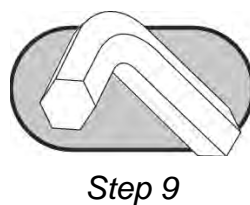
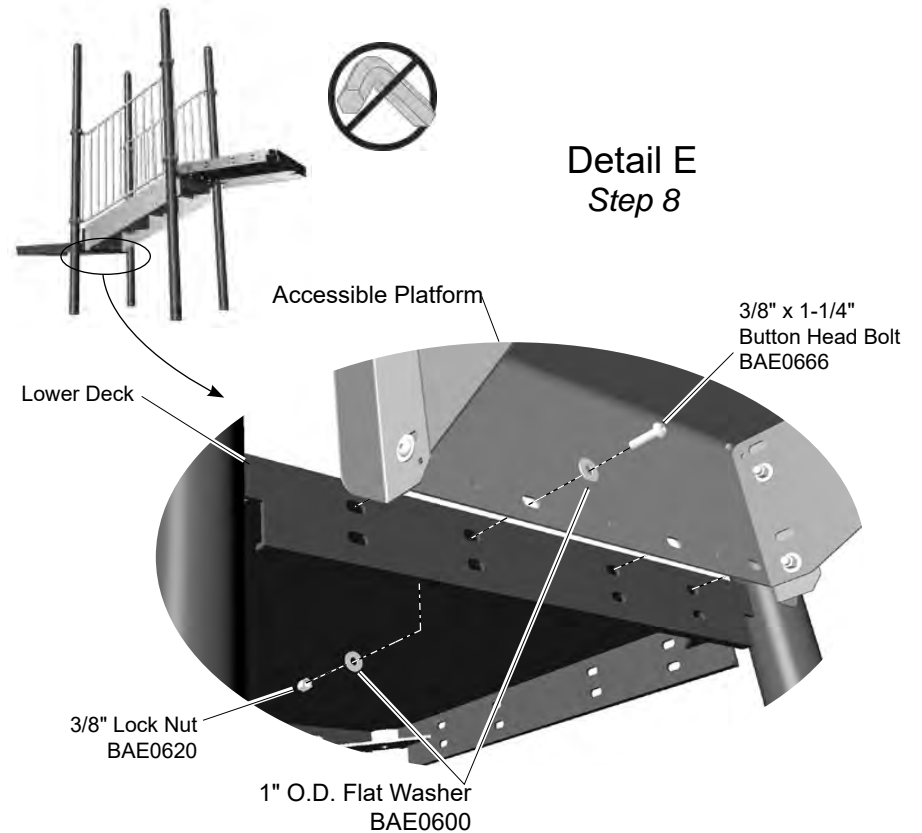
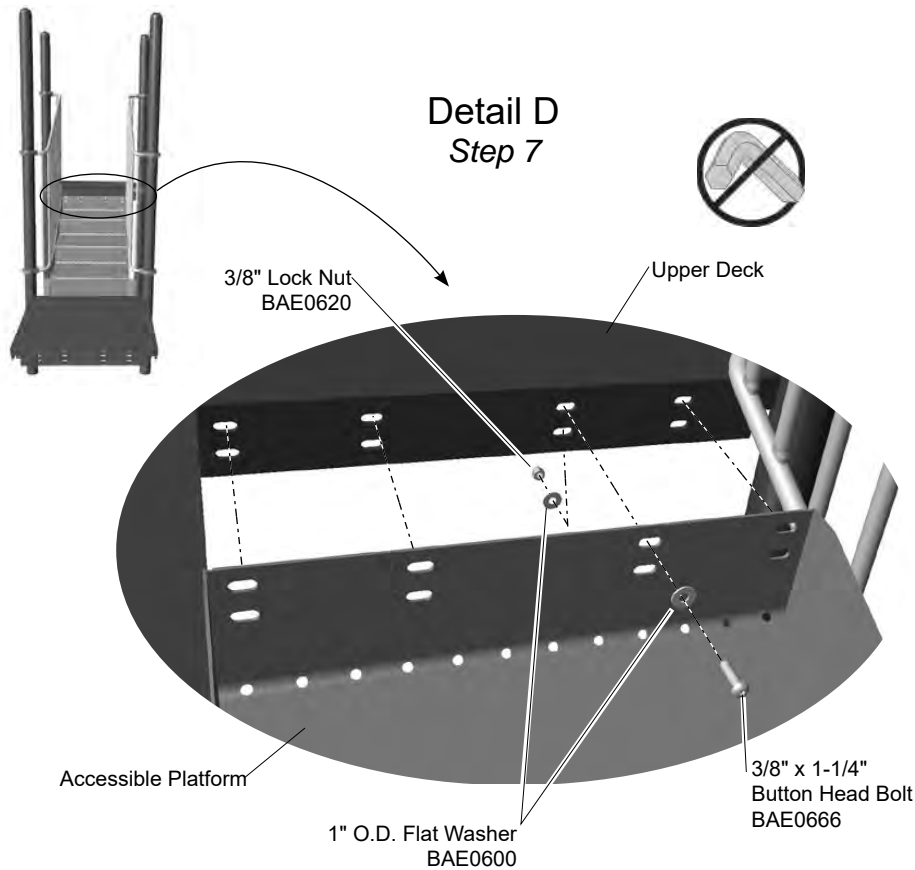
Model	Barriers (Right / Left)	Tiered Platform
ZZCH9168	AEN0479 / AEN0480	BPM0296
ZZCH9170	AEN0481 / AEN0482	BPM0298
ZZCH9177	AEN0483 / AEN0484	BPM0299



Detail B
Step 5



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine location of the platform by referring to the master layout drawing.

Step 4: Attach the clamps to the barriers. See **Detail A**. Select both barriers, the clamps, and the appropriate hardware. Attach a clamp to each of the ends of the barrier rails. There are (4) four clamp connections per barrier. Turn the clamps so that the hinges all face the same direction.

Step 5: Attach the barriers to the posts. See **Detail B**. Select both barriers and the tamper resistant bolts. Place the barriers between the posts, and attach as shown.

Step 6: Attach the angle clips to the accessible platform. See **Detail C**. Select both angle clips, the tiered platform, and the appropriate hardware. Place the angle clips against the lower side of the platform with the front faces aligned. Attach as shown.

Step 7: Attach the tiered platform to the upper deck. See **Detail D**. Select the tiered platform and the appropriate hardware. A brace will be necessary to support the weight until the lower connections are made. Place the platform between the decks and align the upper riser with the upper holes in the deck. Attach as shown. The upper edge of the step should not protrude above the edge of the deck.

Step 8: Attach the tiered platform to the lower deck. See **Detail E**. Select the appropriate hardware. Attach as shown.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts & Nuts - Snug tighten and tighten an additional one-half turn.

Step 10: Rivet the clamps to the posts. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, pound the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH9168 - 12" (305 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0479	BARRIER - 12" ACCESS STAIR PROTECT w/INSERTS (RT)	1
AEN0480	BARRIER - 12" ACCESS STAIR PROTECT w/INSERTS (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0296	STAIR - 12" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2

CH9177 - 36" (610 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0483	BARRIER - 36" ACCESS STAIR PROTECT w/INSERTS (RT)	1
AEN0484	BARRIER - 36" ACCESS STAIR PROTECT w/INSERTS (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0299	STAIR - 36" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2

CH9170 - 24" (610 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0481	BARRIER - 24" ACCESS STAIR PROTECTIVE w/INS. (RT)	1
AEN0482	BARRIER - 24" ACCESS STAIR PROTECTIVE w/INS. (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0298	STAIR - 24" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2



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Assembly View

Installation Instructions


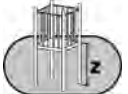




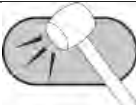
Universal Model UN2019

Platform Approach Step

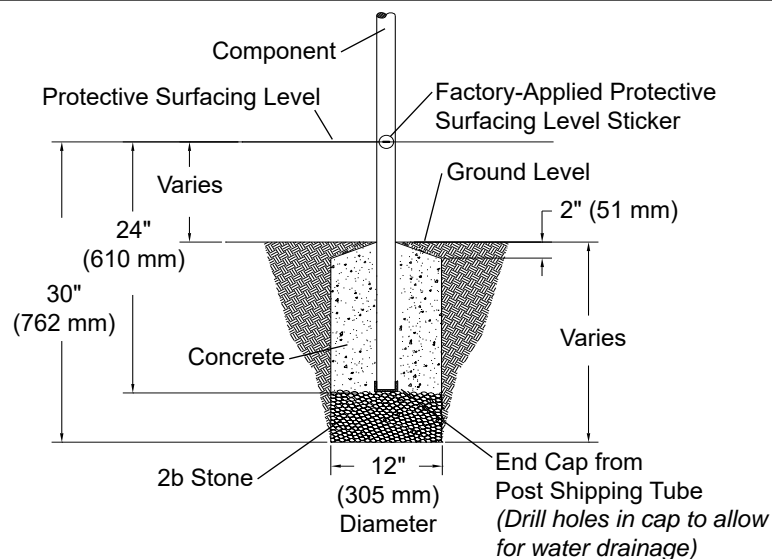
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 1 man-hour
 Concrete Required: 0.03 cubic yard (0,02 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

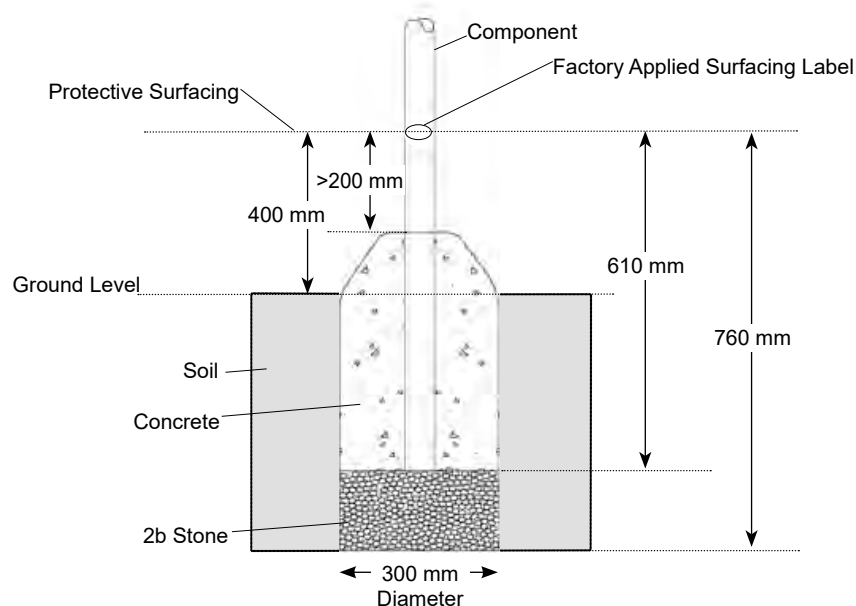
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions



Component Footing Detail (ASTM/CSA)

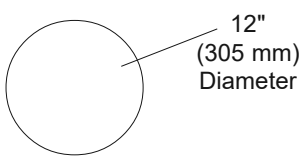


Footing Detail Component Post (EN)

FOOTING NOTES

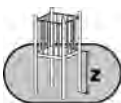
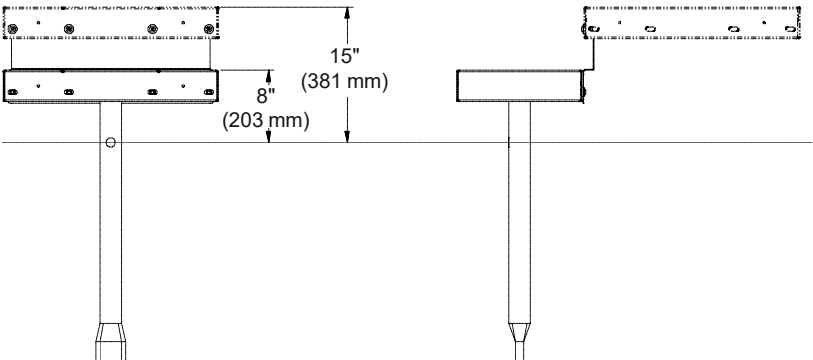
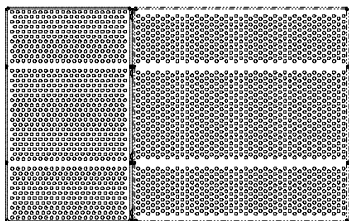
- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Some support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone or porous block.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Footing Diagram

Top View



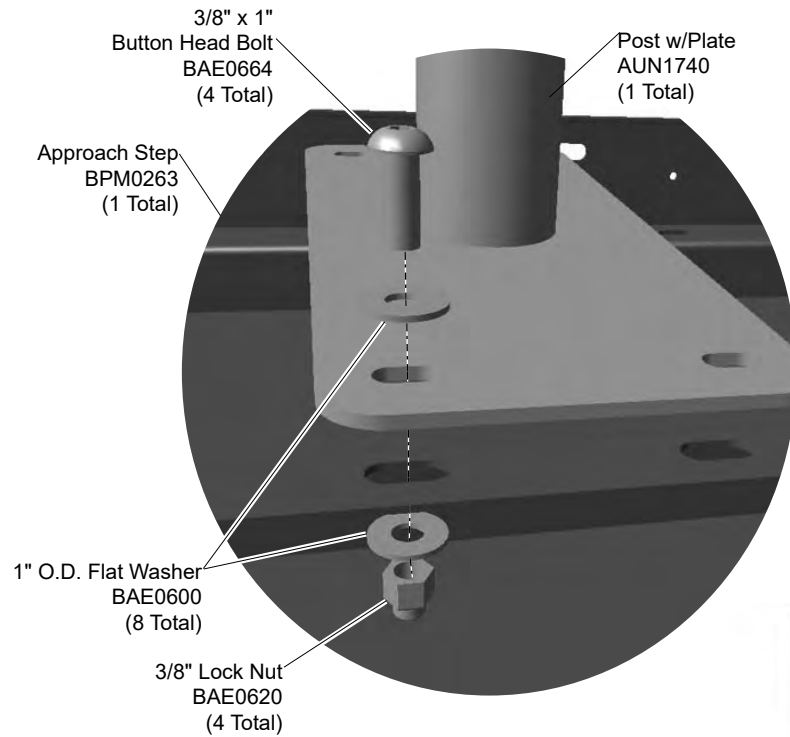
15" (381 mm)

Elevation Views



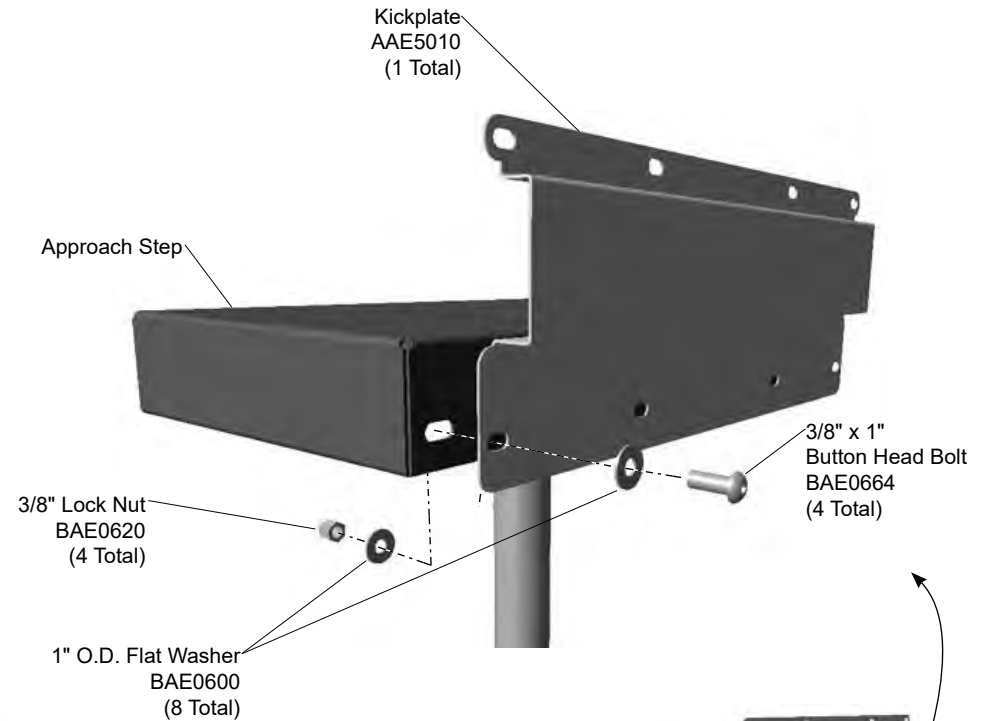
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Detail A
Step 4

Attach the anchor post to the approach step.

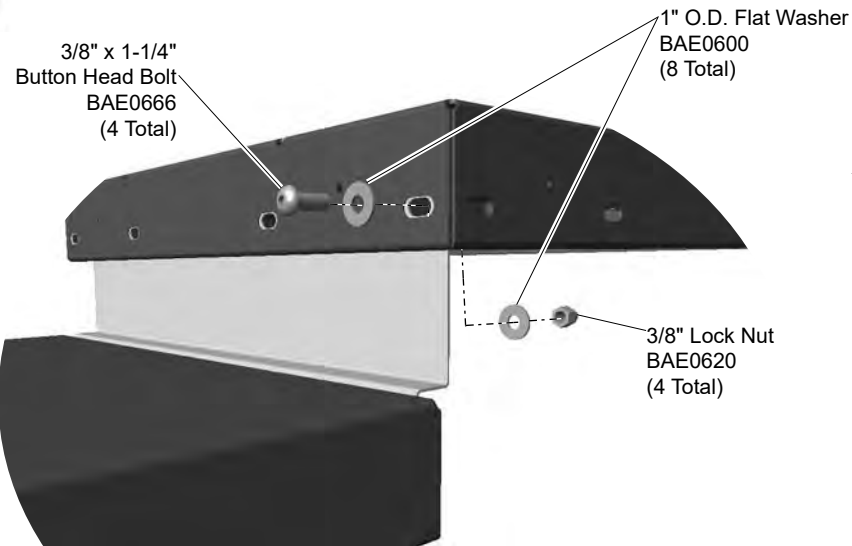
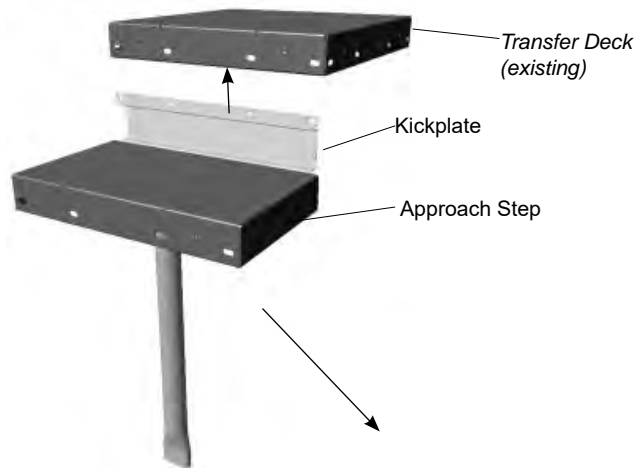


Detail B
Step 5

Attach the kickplate to the approach step.



Installation Instructions



Step 6

Attach the kickplate to the transfer deck.



Step 7



Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Component Footing Details** on page 2 of this installation document.

Attach the support leg to the approach step.

Step 4: Attach the support leg to the approach step. See **Detail A**. Turn the approach step upside down. Align the mounting slots on the underside of the step with those in the support leg plate. Attach as shown.

Attach the kickplate to the approach step.

Step 5: Attach the kickplate to the approach step. See **Detail B**. Position the kickplate so that holes in the wide flange align with the holes of the approach step. Attach as shown.

Attach the approach step assembly to the transfer deck.

Step 6: Attach the approach step assembly to the transfer deck. See **Detail C**. Place the support leg into the excavated footing and position the kickplate inside and under the transfer deck. Attach as shown.

Note: The approach step can be placed on any open side of the transfer deck.

Final Details.

Step 7: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

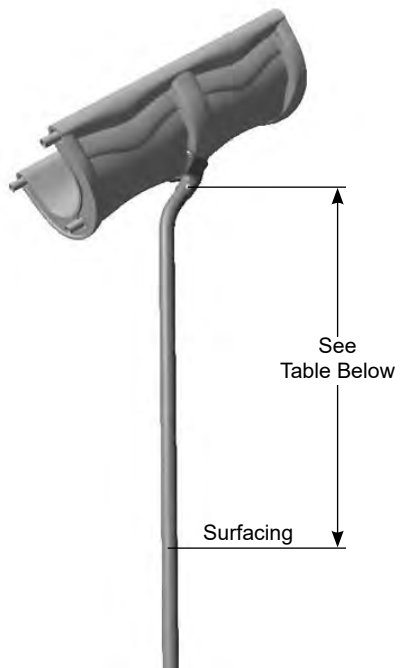
UN2019 - PLATFORM-APPROACH STEP

PART NO.	DESCRIPTION	QTY.
AAE5010	KICKPLATE - 7" x 23"	1
AUN1740	POST - 2-3/8" O.D. x 30-3/16" SUPPORT LEG w/PLATE	1
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/ NYLON CAP	12
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BPM0263	PLATFORM- 14" x 24" APPROACH STEP	1



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Assembly View (representative model)

Model	Elevation Above Surfacing
ZZUN3246	73.6" (1869 mm)
ZZUN3247	61.5" (1562 mm)
ZZUN3248	49.6" (1260 mm)
ZZUN3249	37.6" (955 mm)
ZZUN3256	25.5" (648 mm)
ZZUN3257	7.6" (193 mm)


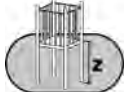

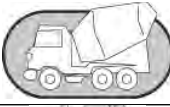



Installation Instructions

Universal Models UN3246, UN3247, UN3248,
UN3249, UN3256, and UN3257
6' 6" (1981 mm), 5' 6" (1676 mm), 4' 6" (1372 mm),
3' 6" (1067 mm), 2' 6" (762 mm), and 1' (305 mm)
Segmented Slide Support Leg

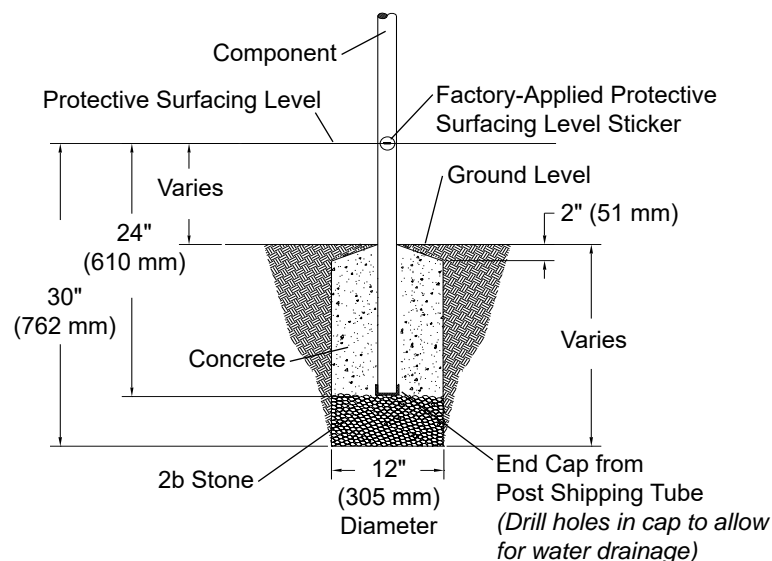
Installation Preparation

Recommended Crew: One (1) adult
Installation Time: 0.5 hour
Concrete Required: 0.03 cubic yard (0,02 cubic meters)

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions



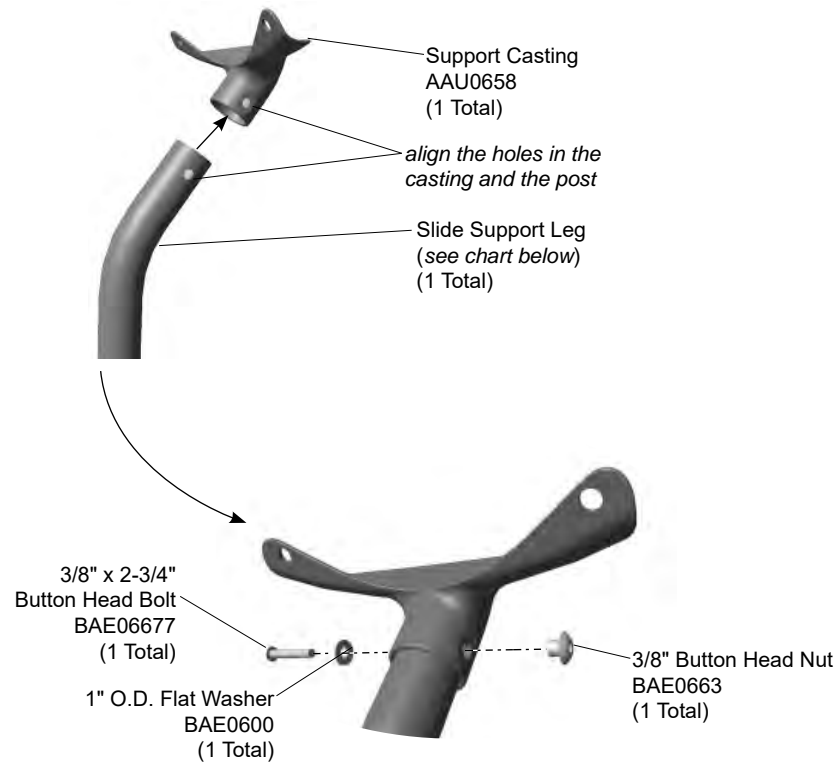
Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Some support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone or porous block.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.

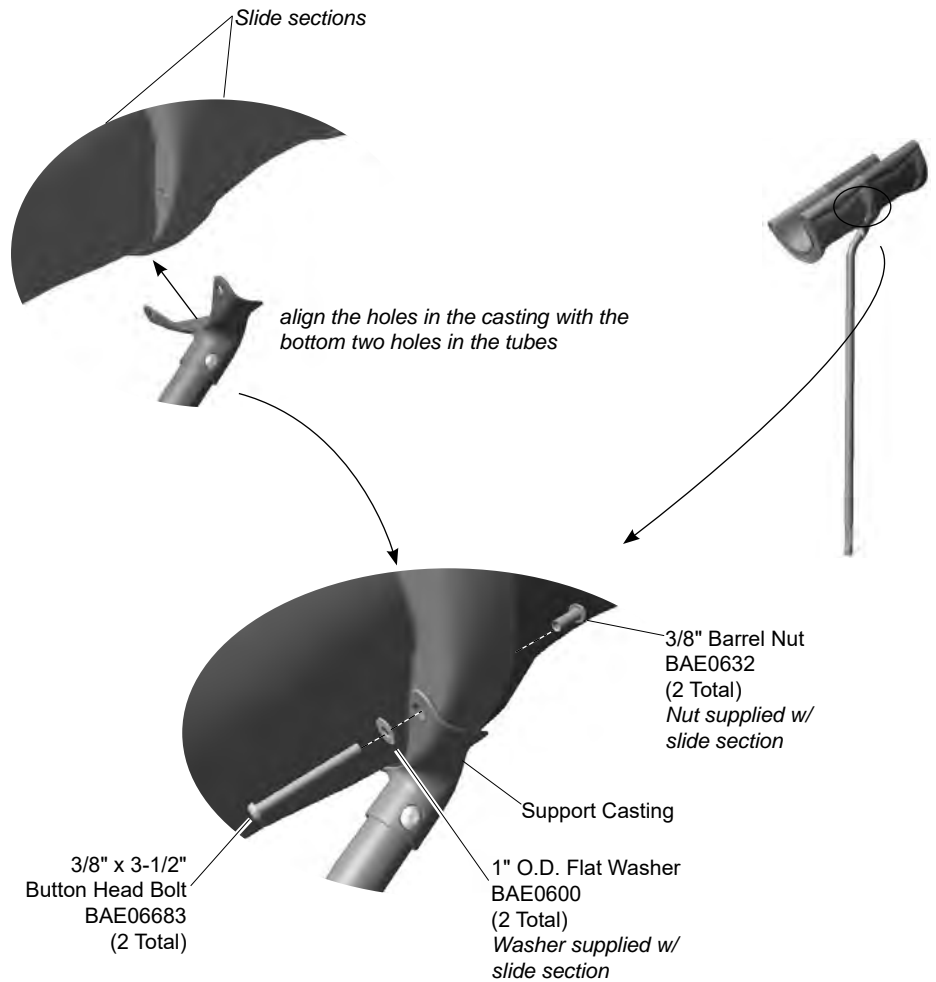


Detail A

Step 4

Attach the support casting to the support leg.

Model	Leg Part Number
ZZUN3246	APT0407
ZZUN3247	APT0408
ZZUN3248	APT0409
ZZUN3249	APT0410
ZZUN3256	APT0411
ZZUN3257	APT0838

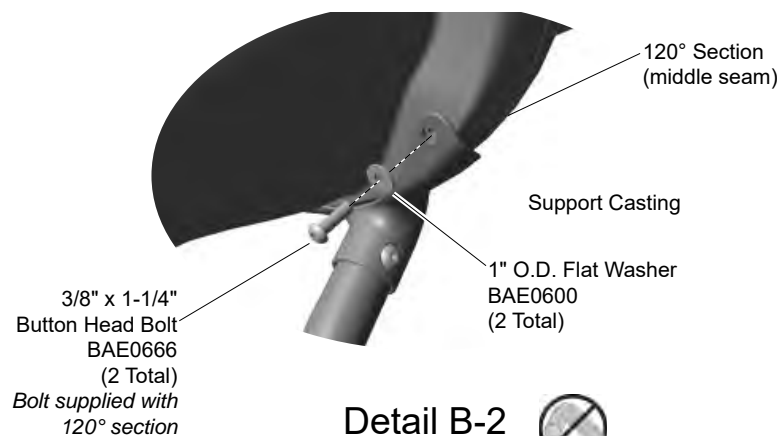


Detail B-1

Step 5

Attach the support leg to the slide sections except for the 120° section.
(60" - 72" slides only)

Installation Instructions



Detail B-2

Step 5

Attach the support leg to the middle seam of 120° section.



Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware. Reference the master layout drawing for placement of the support leg.

Step 3: Excavate footings as shown in the **Component Footing Details** in the *Guidelines* at the beginning of the instruction booklet and on page 2 of this installation document. Reference the master layout drawing for placement of the footing holes for the slide support legs.

Step 4: Attach the support casting to the tube support leg. See **Detail A**. Lower the support casting onto the support leg, align the holes, and attach as shown.

Step 5: Attach the support casting to the slide sections. See **Details B-1 and B-2**. Place the leg in the footing and align the support casting with the bottom holes in the seam of two connected slide sections and attach as shown. For the 120° section, position the casting against the middle seam bottom holes which contain threaded inserts and attach as shown.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Important: **Make sure the support post is in the correct position according to the dimension outlined in the *Elevation Above Surfacing* table shown on page 1.** Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

UN3246 - SEGMENTED SLIDE SUPPORT LEG 6 ft - 6 in.

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0407	POST - 2-3/8" x 99-5/16" x 6-3/32"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

UN3249 - SEGMENTED SLIDE SUPPORT LEG 3 ft - 6 in.

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0410	POST - 2-3/8" x 63-5/16" x 6-3/32"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

UN3247 - SEGMENTED SLIDE SUPPORT LEG 5 ft - 6 in.

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0408	POST - 2-3/8" x 87-5/16" x 6-3/32"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

UN3256 - SEGMENTED SLIDE SUPPORT LEG 2 ft - 6 in.

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0411	POST - 2-3/8" x 51-5/16" x 6-3/32"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

UN3248 - SEGMENTED SLIDE SUPPORT LEG 4 ft - 6 in.

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0409	POST - 2-3/8" x 75-5/16" x 6-3/32"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

UN3257 - SEGMENTED SLIDE SUPPORT LEG 1 ft

PART NO.	DESCRIPTION	QTY.
AAU0658	CASTING - 14.35" x 6.11" x 6.37"	1
APT0838	POST - 2-3/8" x 33.29" x 6.10"	1
BAE0600	WASHER - 1" SS FLAT	3
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1
BAE06683	BOLT - 3/8"-16 x 3-1/2" BUTTON HEAD - SS	2

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intentionally left blank.



Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance

Universal Models UN3246, UN3247, UN3248, UN3249, UN3256, and UN3257
6' 6" (1981 mm), 5' 6" (1676 mm), 4' 6" (1372 mm), 3' 6" (1067 mm), 2' 6" (762 mm), and 1' (305mm)
Segmented Slide Support Leg





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www.playworldsystems.com

Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect surfacing to insure proper depth and distribution.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

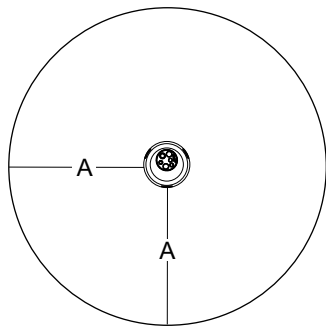
Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___





Assembly View (representative model)



Equipment Use Zone
A - (ASTM) 72 in. (1830 mm)
(CSA) 1800 mm
(EN) 1500 mm

Installation Instructions







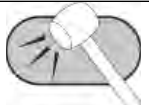
Universal Models UN7136 and UN7136S

Unity Stepper (Small)

In-Ground and Surface Mount

Installation Preparation

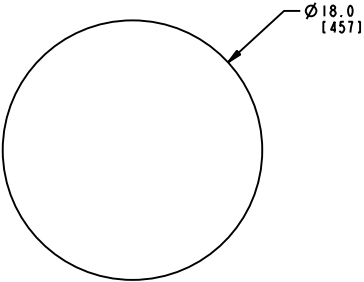
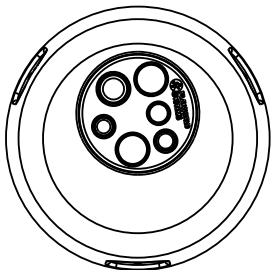
Recommended Crew: Two (2) adults
Installation Time (in-ground): 1 man-hour
Installation Time (surface mount): 0.5 man-hour
Concrete Required: 0.13 cubic yard (0,10 cubic meters)
Use Zone: Refer to the information below
User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY			
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

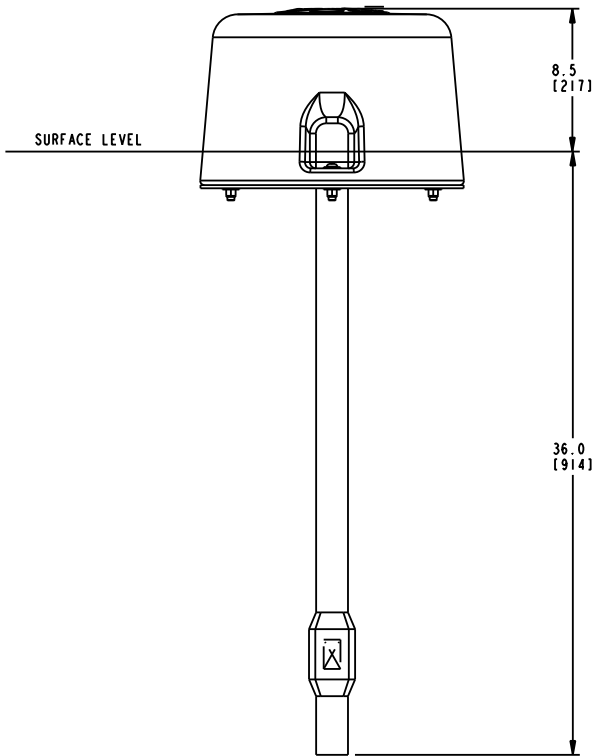
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

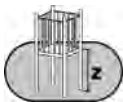
Top View



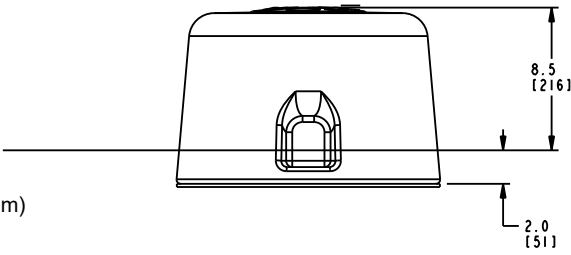
Footring Diagram



Elevation Views
UN7136



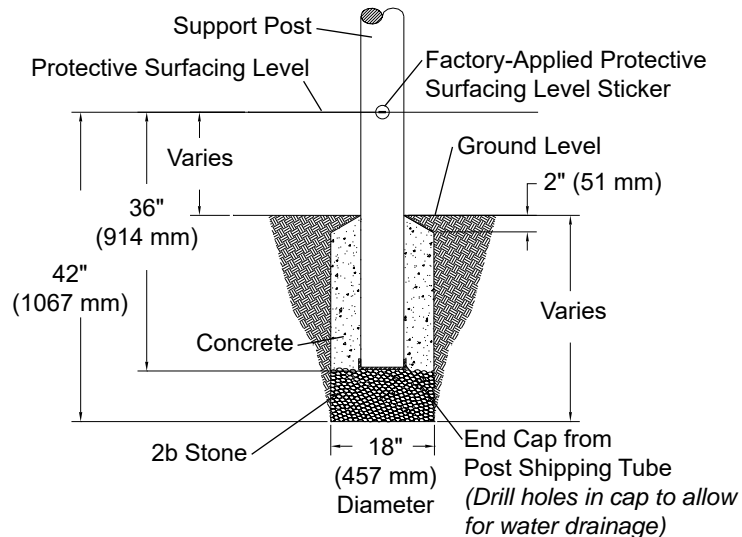
ASTM/CSA: 8.5" (217 mm)
EN: 217 mm



Elevation Views
UN7136S



Installation Instructions



Support Post Footing Detail (ASTM/CSA)

FOOTING NOTES

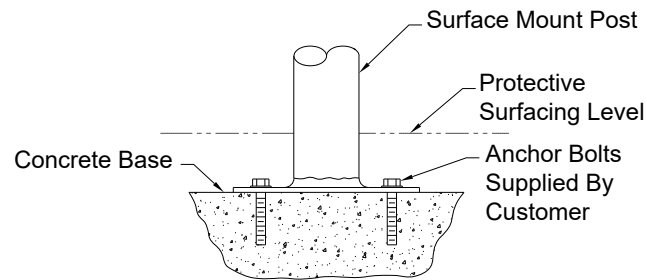
- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

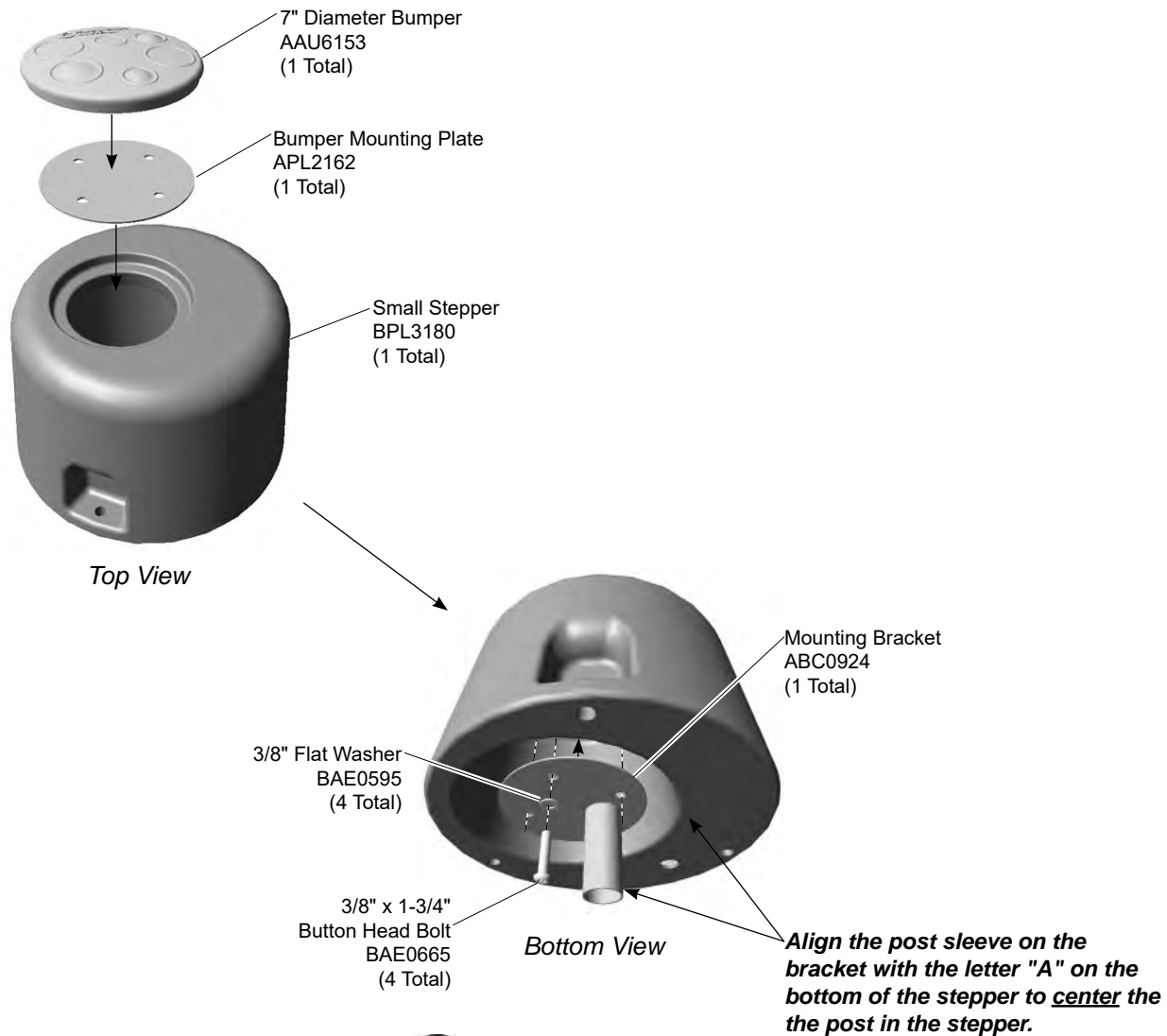
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



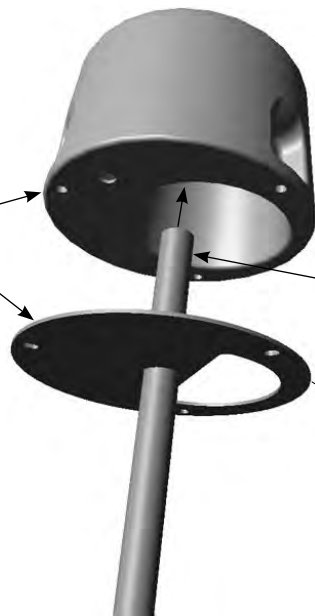
Detail A
Step 4



Assemble the stepper.

Installation Instructions

Important Note: The wide part of the anchor plate must align with the wide portion of the stepper. Ensure the holes in both are also aligned. Then fully tighten the connections made in **Step 4**.



In-Ground Model

Insert over the post sleeve on the mounting bracket.

Anchor Post
APT5254
(1 Total)

Anchor Bracket
APT5299
(1 Total)



Surface Mount Model

Detail B Step 5



Position the anchor post/bracket inside the stepper.



3/8" x 1-3/4"
Button Head Bolt
BAE0665
(3 Total)

1" O.D. Flat Washer
BAE0600
(6 Total)

3/8" Lock Nut
BAE0620
(3 Total)

Detail C Step 6



*(In-Ground Model Only)
Attach the anchor post to the stepper.*

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate, or prepare, the footings as shown in the **Support Post Footing Detail or Surface Mount Footing Detail** on pages 3 and 4 of this installation document.

Step 4: Assemble the stepper. See **Detail A**. Place the bumper and bumper mounting plate on top of the stepper. From underneath the stepper, insert the mounting bracket up into the stepper and align with the holes in the bumper and bumper mounting plate. **Ensure the post sleeve on the bracket is aligned with the letter "A" in the bottom of the stepper.**

Step 5: Position the anchor post/bracket inside the stepper. See **Detail B**. Insert the sleeve on the anchor post/bracket over the post sleeve on the mounting bracket with the wide part of the anchor plate aligned with the wide portion of the stepper. Align the holes in the anchor plate with the holes in the stepper and then fully tighten the connections made in **Step 4**. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 6: *(In-Ground Model Only)* Attach the anchor post to the stepper. See **Detail C**. Attach as shown in the detail. Fully tighten the connections according to tightening torque specifications.

Final Details.

Step 7: Place the stepper in, or on, its footing and plumb and level.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 8: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component where it can be visible.



UN7136 - UNITY STEPPER (SMALL)

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
ABC0924	BRACKET - 6.69" DIA x 4.08"	1
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	1
APT5254	POST - 15.70" x 15.70" x 42.18" SMALL	1
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	3
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	7
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3180	SOFT ROCK - SMALL	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

UN7136S - UNITY STEPPER (SMALL) SM

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
ABC0924	BRACKET - 6.69" DIA x 4.08"	1
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	1
APT5299	POST - 15.70" x 15.70" x 8.00" SMALL (SM)	1
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3180	SOFT ROCK - SMALL	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



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Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance Universal Models UN7136 and UN7136S Unity Stepper (Small) In-Ground and Surface Mount



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ***... for Safety's Sake!***

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment **must** be installed "Step by Step" per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.
- **ASTM compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 72 inches (1829 mm) from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 30 inches (762 mm) above the protective surfacing level. They should be a minimum of 72 inches (1829 mm) apart. If the adjacent designated play surfaces are greater than 30 inches (762 mm) above the protective surfacing level, the pieces of equipment should be a minimum of 108 inches (2743 mm) apart.
- **CSA compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 1800 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 700 mm above the protective surfacing level. They should be a minimum of 1800 mm apart.

- **EN compliance:** The overall use zone measurements for stationary play equipment are dependent upon the fall height of the equipment. For a fall height exceeding 1500 mm a formula is applied to determine the use zone (impact zone) of the equipment. There is a minimum of 1500 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. Refer to the Use Zone diagram or master structure drawing.
- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.
- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that Age Appropriate and Hard Surface Warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.

Guidelines

- **IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbency. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Critical fall heights for Europe and Canadian compliance shall be listed on the elevation page or master structure drawing if they differ from the ASTM standard. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

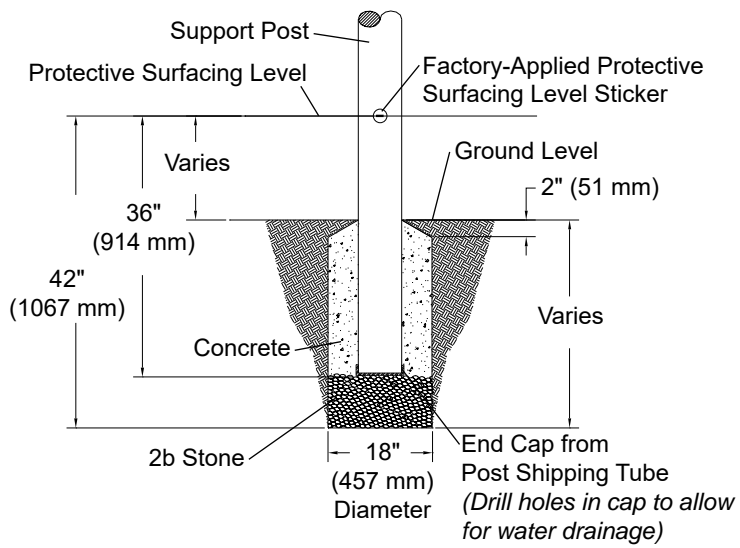
Maintenance

- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

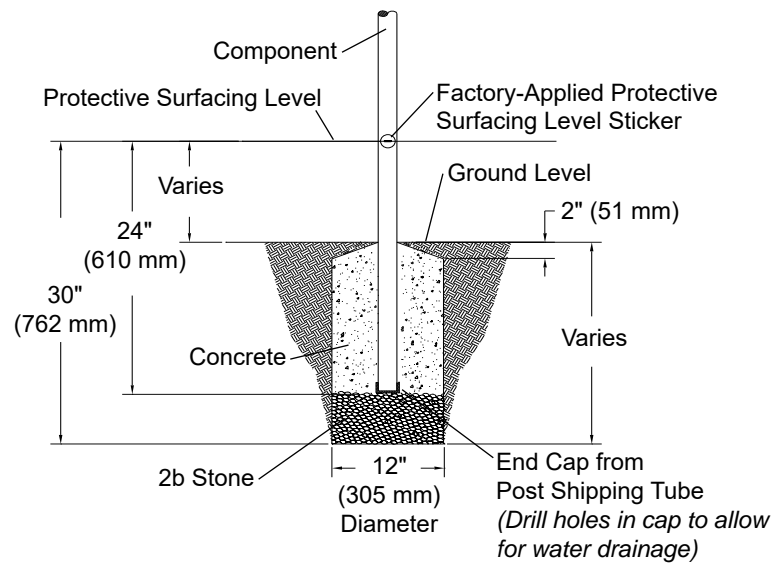
Supervision Guidelines

- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that preschool-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.

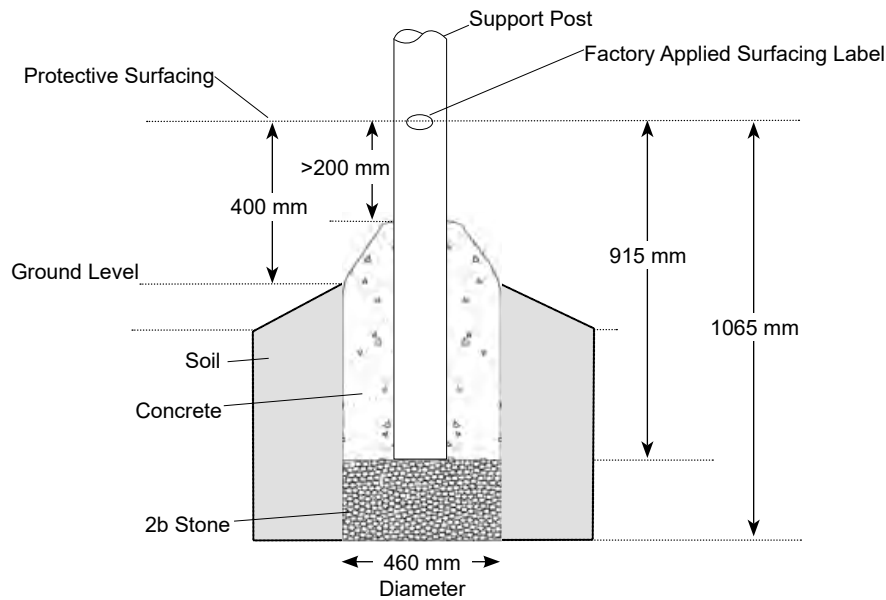
Footings Details (in ground)



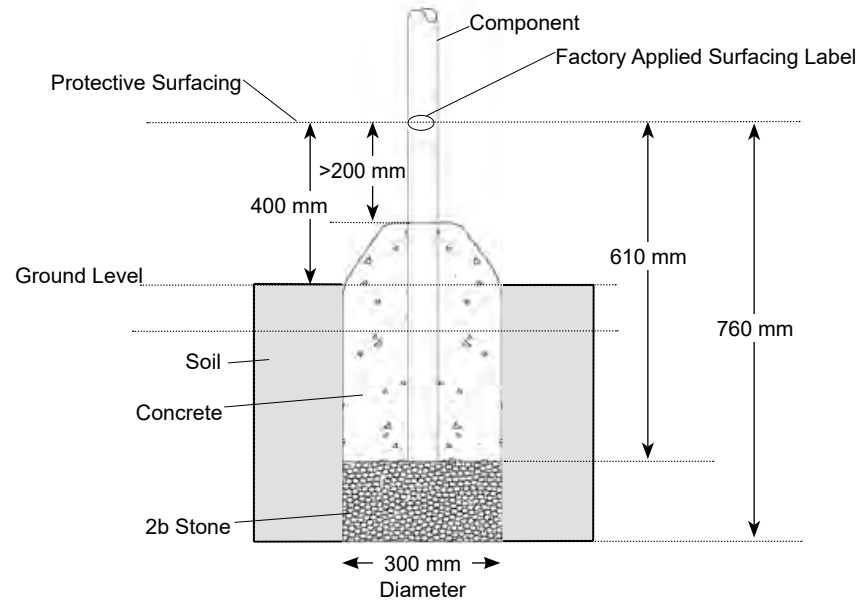
Support Post Footing Detail (ASTM/CSA)



Component Footing Detail (ASTM/CSA)



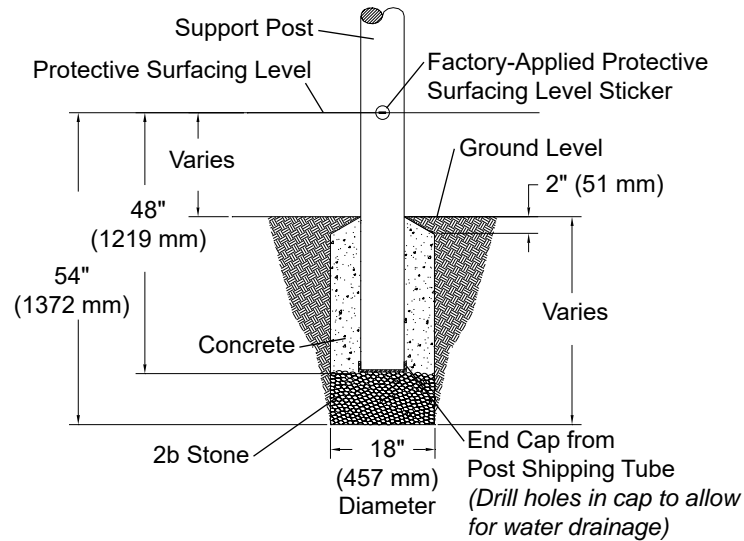
Footing Detail Support Post (EN)



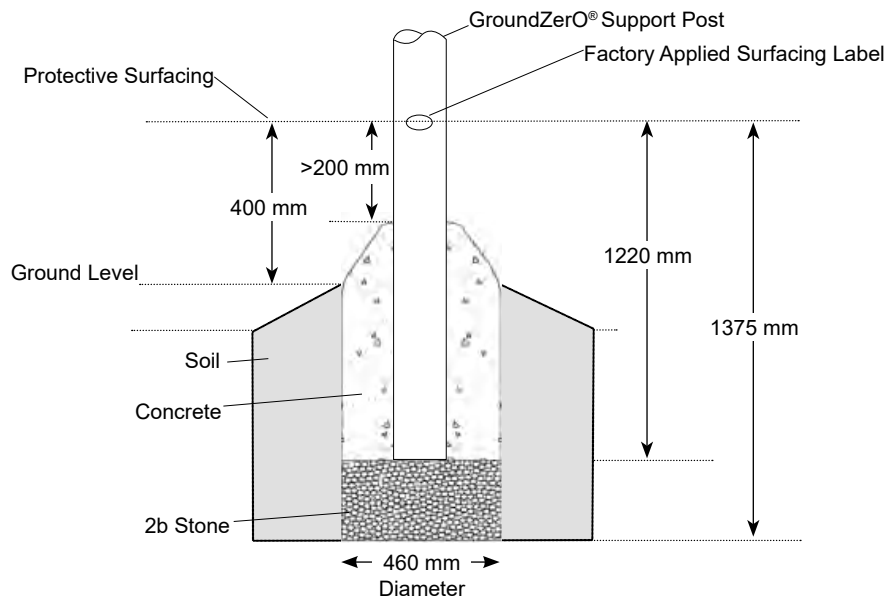
Footing Detail Component Post (EN)



Footings Notes (in ground)

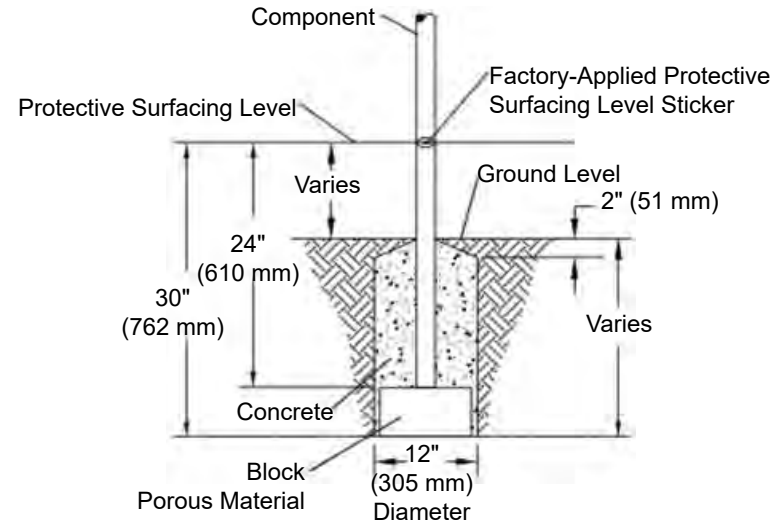


GroundZero® Support Post Footing Detail ASTM/CSA

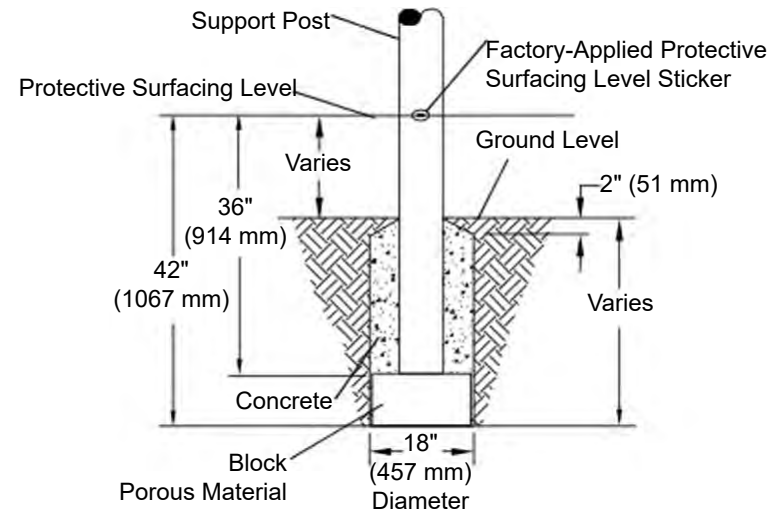


Footing Detail GroundZero® Support Post (EN)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION



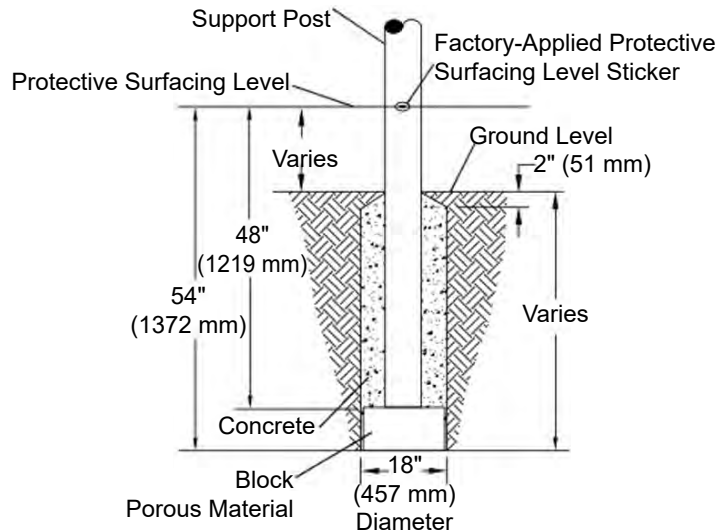
Component Footing Detail (ASTM/CSA)
Block Option



Support Post Footing Detail (ASTM/CSA)
Block Option

Footings Notes & Details (in ground)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION

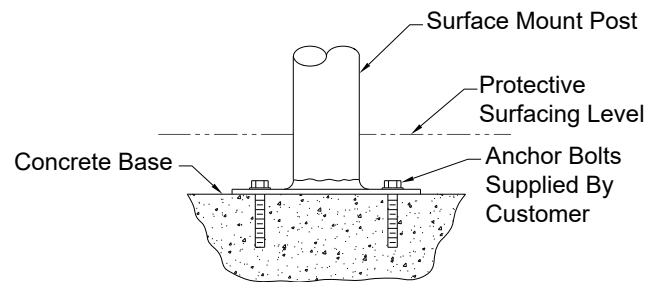


GroundZero® Support Post Footing Detail ASTM/CSA
Block Option

FOOTING NOTES (IN GROUND)

- Support post footing depth equals 42 in. (1067 mm) minus the depth of the protective surfacing material. The posts are designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.
- Component footing depth equals 30 in. (762 mm) minus the depth of the protective surfacing material. The posts are designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Most support posts and component support legs will have either a factory-applied sticker with a line, or factory-applied mark designating the level of protective surfacing on a clear and level installation site. The footing depth measurements are based on this line/mark.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase the bottom of the support post in concrete. Place the post directly on packed stone or other porous material.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- The base of the footing must be below the frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.

Footing Notes & Details (surface mount)



Surface Mount Footing Detail

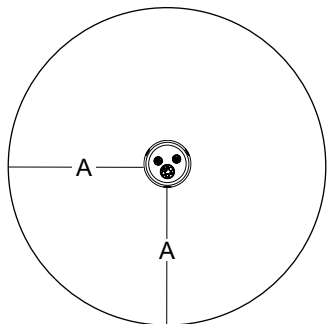
FOOTING NOTES (SURFACE MOUNT)

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- The footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.



Assembly View (representative model)



Equipment Use Zone
A - (ASTM) 72 in. (1830 mm)
(CSA) 1800 mm
(EN) 1500 mm

Installation Instructions

Universal Models UN7137 and UN7137S


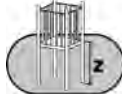




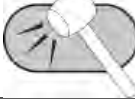
Unity Stepper (Medium)

In-Ground and Surface Mount

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time (in-ground): 1 man-hour
Installation Time (surface mount): 0.5 man-hour
Concrete Required: 0.13 cubic yard (0,10 cubic meters)
Use Zone: Refer to the information below
User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

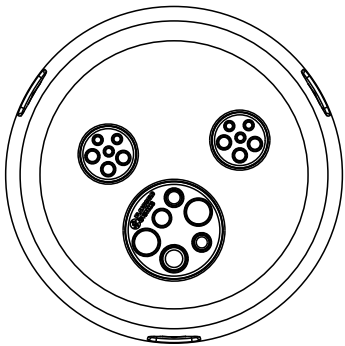
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

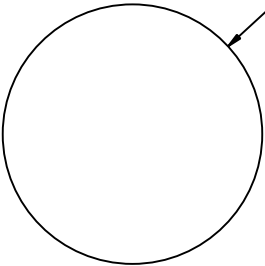
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

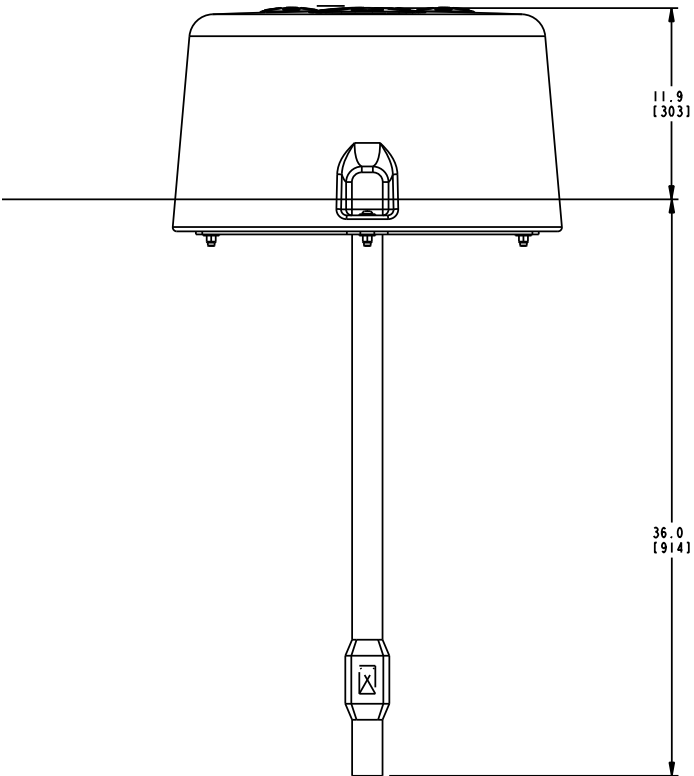
Top View



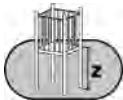
Ø 18.0
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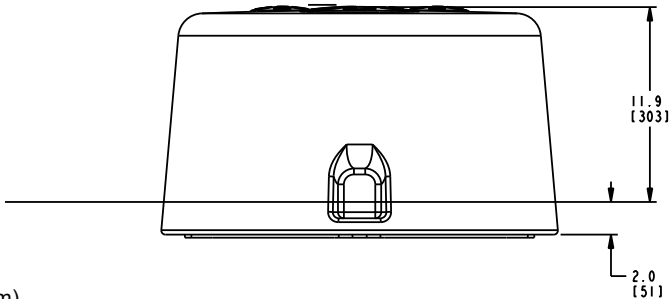
Footings Diagram



Elevation Views
UN7137



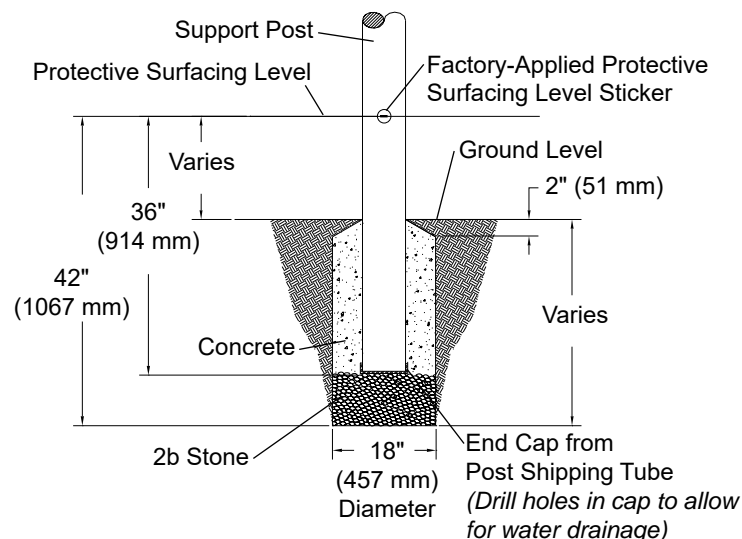
11.9" (303 mm)



Elevation Views
UN7137S



Installation Instructions



Support Post Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

For example:

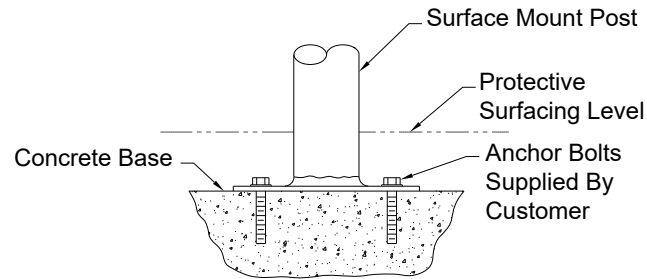
- If local soil is loose or unstable, a larger footing may be required.

- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

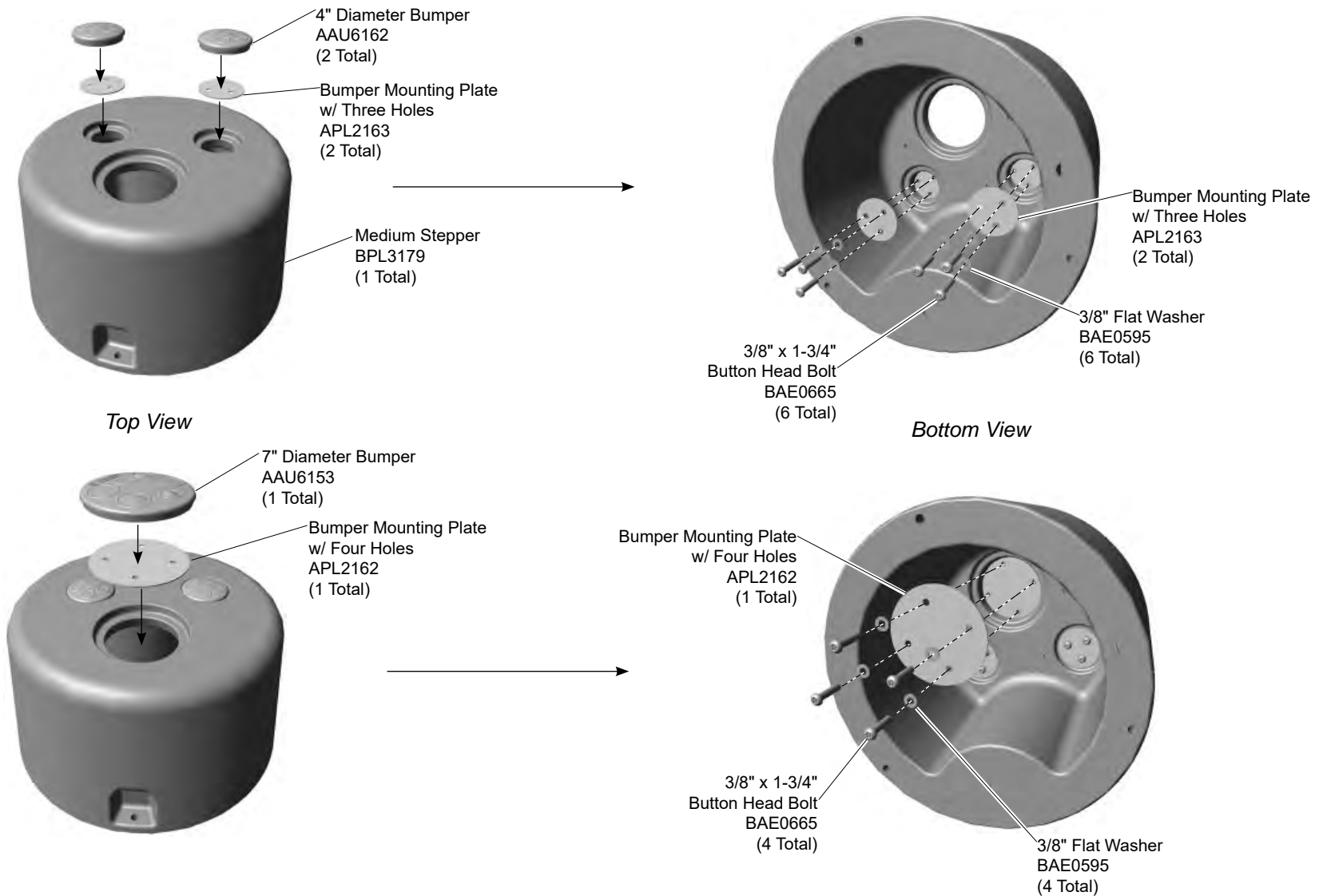
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 8.

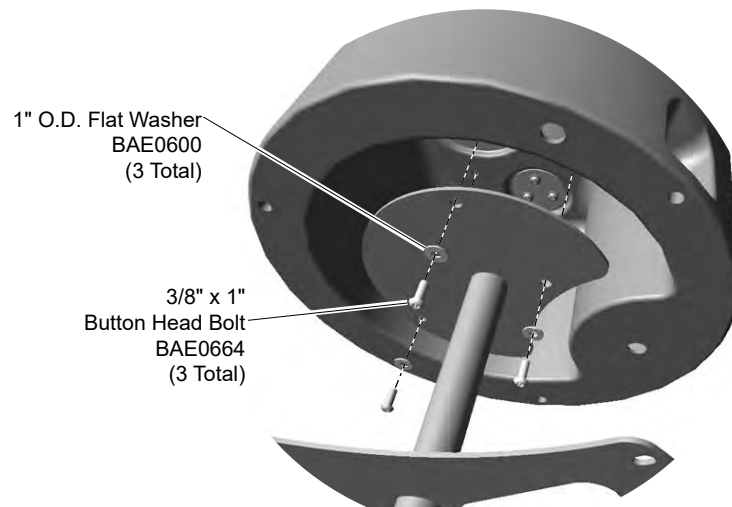
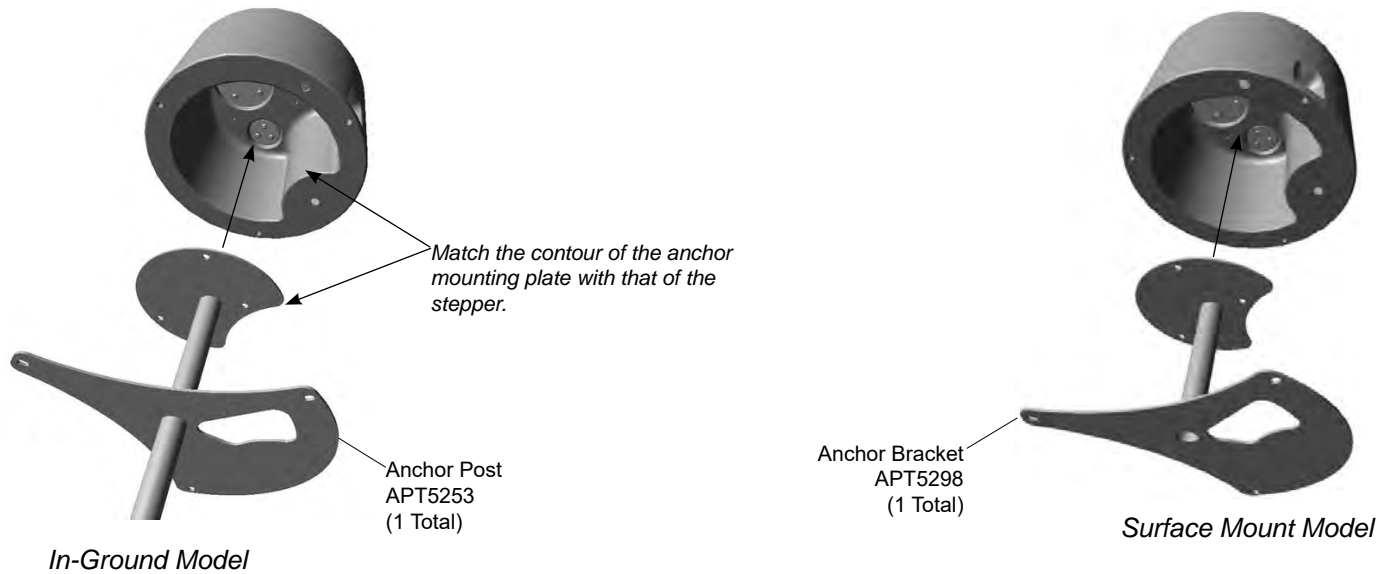


Detail A Step 4



Attach the bumpers to the stepper.

Installation Instructions

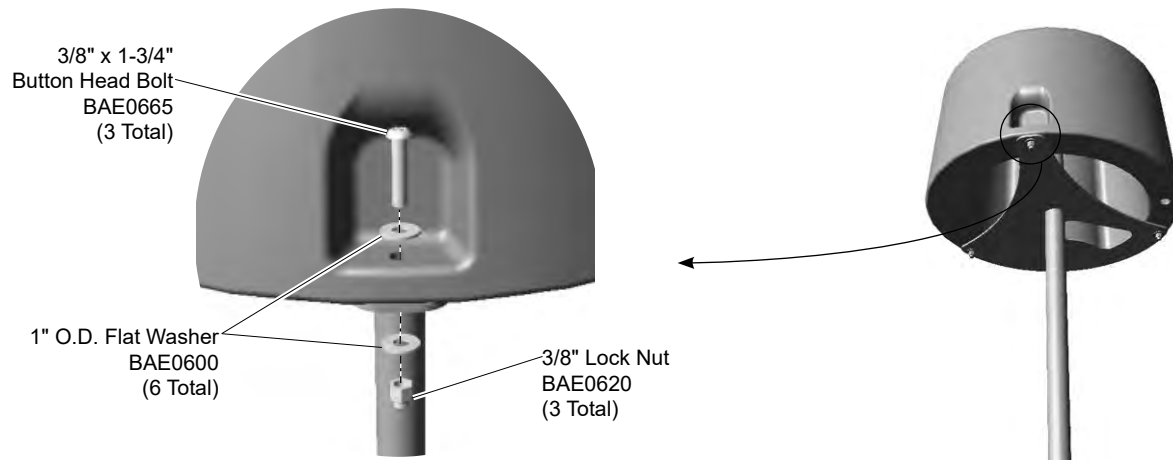


Detail B Step 5



Attach the anchor post/bracket to the stepper.

Installation Instructions



Detail C Step 6



(In-Ground Model Only)
Attach the anchor post to the stepper.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate, or prepare, the footings as shown in the **Support Post Footing Detail or Surface Mount Footing Detail** on pages 3 and 4 of this installation document.

Step 4: Attach the bumpers to the stepper. See **Detail A**. Place the bumpers and bumper mounting plates on top of the stepper as shown. From underneath the stepper, insert another mounting plate up into the stepper and align with the holes in the bumpers and first bumper mounting plates. Attach as shown. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 5: Attach the anchor post/bracket to the stepper. See **Detail B**. Insert the anchor up inside the stepper making sure the contour of the anchor mounting plate conforms to the contour of the stepper and align the holes. Attach as shown. Fully tighten the connections according to tightening torque specifications.

Step 6: *(In-Ground Model Only)* Attach the anchor post to the stepper. See **Detail C**. Attach as shown in the detail. Fully tighten the connections according to tightening torque specifications.

Final Details.

Step 7: Place the stepper in, or on, its footing and plumb and level.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 8: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component where it can be visible.

UN7137 - UNITY STEPPER (MEDIUM)

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
AAU6162	BUMPER - 4.00" DIA INSERT	2
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	2
APL2163	PLATE - 3.63" x 14 GA. w/ 3 HOLES	4
APT5253	POST - 21.41" x 24.00" x 45.50" MEDIUM	1
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	WASHER - 1" O.D. FLAT	9
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	3
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	3
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	13
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3179	SOFT ROCK - MEDIUM	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

UN7137S - UNITY STEPPER (MEDIUM) SM

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
AAU6162	BUMPER - 4.00" DIA INSERT	2
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	2
APL2163	PLATE - 3.63" x 14 GA. w/ 3 HOLES	4
APT5298	POST - 21.41" x 24.00" x 11.69" MEDIUM	1
BAE0595	WASHER - 3/8" SAE FLAT	10
BAE0600	WASHER - 1" O.D. FLAT	3
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	3
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	10
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3179	SOFT ROCK - MEDIUM	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



The world needs play.

For Customer Service, Call
800-233-8404 or
570-522-9800 OUTSIDE U.S.
1000 Buffalo Road • Lewisburg, PA 17837
www.playworldsystems.com

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Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance Universal Models UN7137 and UN7137S Unity Stepper (Medium) In-Ground and Surface Mount



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment **must** be installed "Step by Step" per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.
- **ASTM compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 72 inches (1829 mm) from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 30 inches (762 mm) above the protective surfacing level. They should be a minimum of 72 inches (1829 mm) apart. If the adjacent designated play surfaces are greater than 30 inches (762 mm) above the protective surfacing level, the pieces of equipment should be a minimum of 108 inches (2743 mm) apart.
- **CSA compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 1800 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 700 mm above the protective surfacing level. They should be a minimum of 1800 mm apart.

- **EN compliance:** The overall use zone measurements for stationary play equipment are dependent upon the fall height of the equipment. For a fall height exceeding 1500 mm a formula is applied to determine the use zone (impact zone) of the equipment. There is a minimum of 1500 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. Refer to the Use Zone diagram or master structure drawing.
- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.
- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that Age Appropriate and Hard Surface Warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.

Guidelines

- **IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbency. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Critical fall heights for Europe and Canadian compliance shall be listed on the elevation page or master structure drawing if they differ from the ASTM standard. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

Maintenance

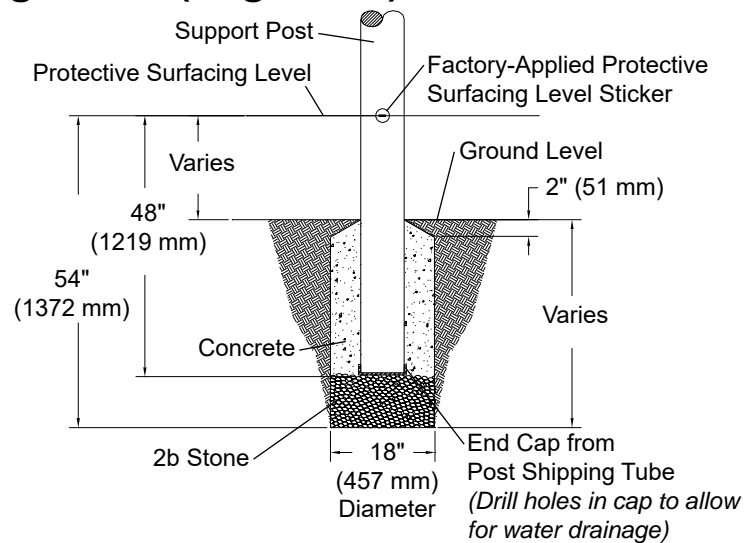
- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must to be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

Supervision Guidelines

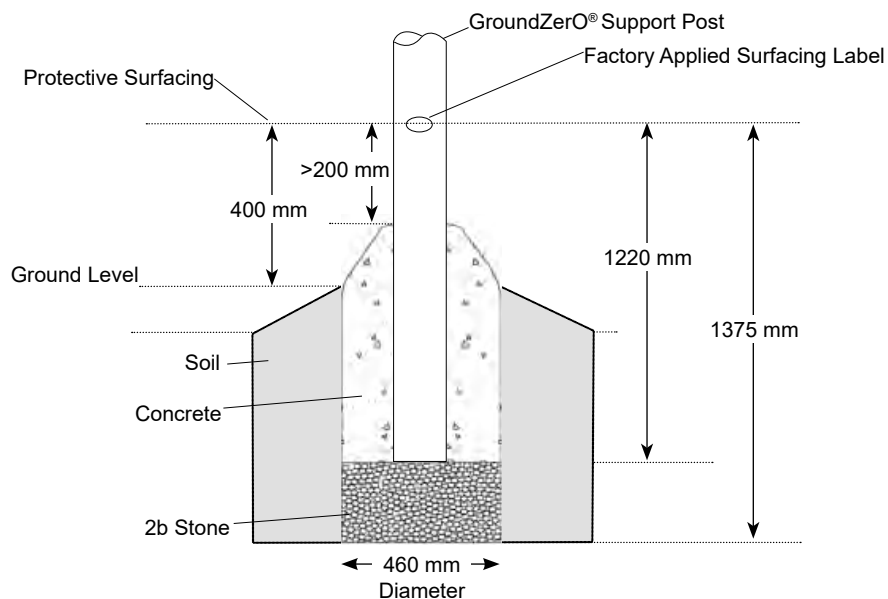
- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that preschool-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.



Footings Notes (in ground)

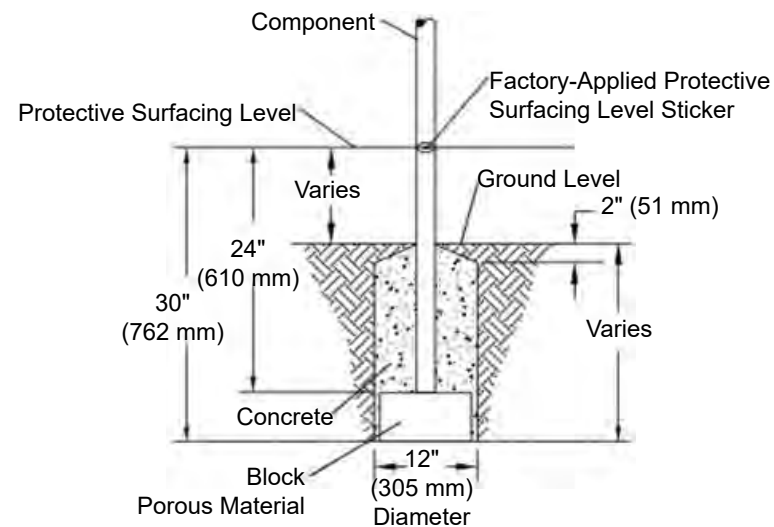


GroundZero® Support Post Footing Detail ASTM/CSA

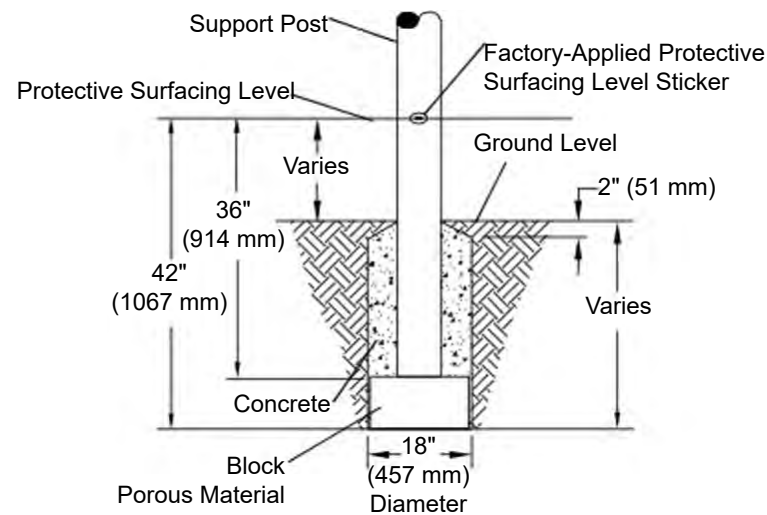


Footing Detail GroundZero® Support Post (EN)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION



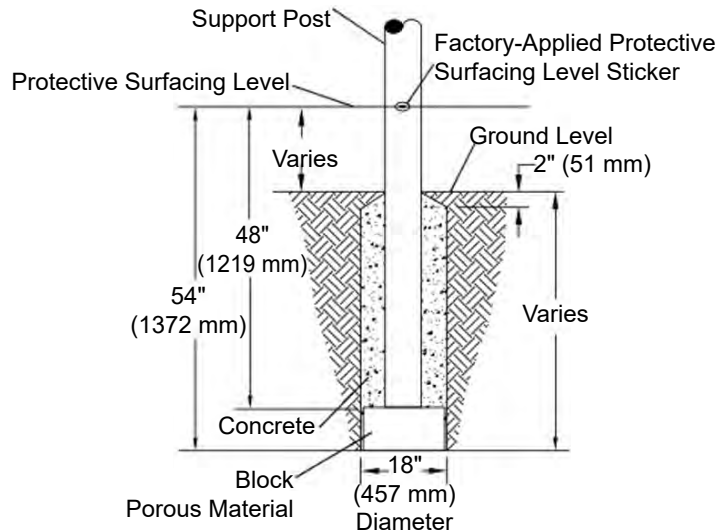
Component Footing Detail (ASTM/CSA)
Block Option



Support Post Footing Detail (ASTM/CSA)
Block Option

Footings Notes & Details (in ground)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION

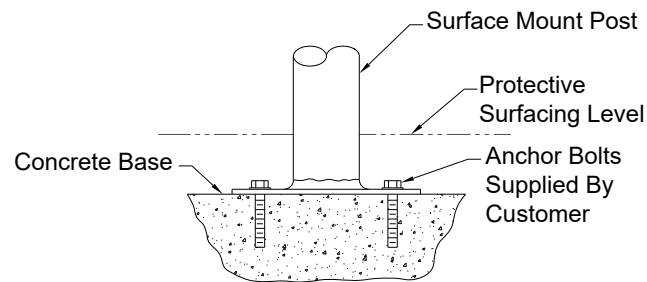


GroundZero® Support Post Footing Detail ASTM/CSA
Block Option

FOOTING NOTES (IN GROUND)

- Support post footing depth equals 42 in. (1067 mm) minus the depth of the protective surfacing material. The posts are designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.
- Component footing depth equals 30 in. (762 mm) minus the depth of the protective surfacing material. The posts are designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Most support posts and component support legs will have either a factory-applied sticker with a line, or factory-applied mark designating the level of protective surfacing on a clear and level installation site. The footing depth measurements are based on this line/mark.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase the bottom of the support post in concrete. Place the post directly on packed stone or other porous material.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- The base of the footing must be below the frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.

Footling Notes & Details (surface mount)



Surface Mount Footing Detail

FOOTING NOTES (SURFACE MOUNT)

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- The footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.



Assembly View


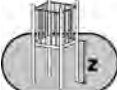





Installation Instructions

Playworld Systems® Model XX0219
Rope Basket Swing - Arch Swing

Installation Preparation

Recommended Crew: One (1) adult
Installation Time: 0.5 man-hours
User Group Age (years): ASTM: 2-12, CSA: 1.5-12

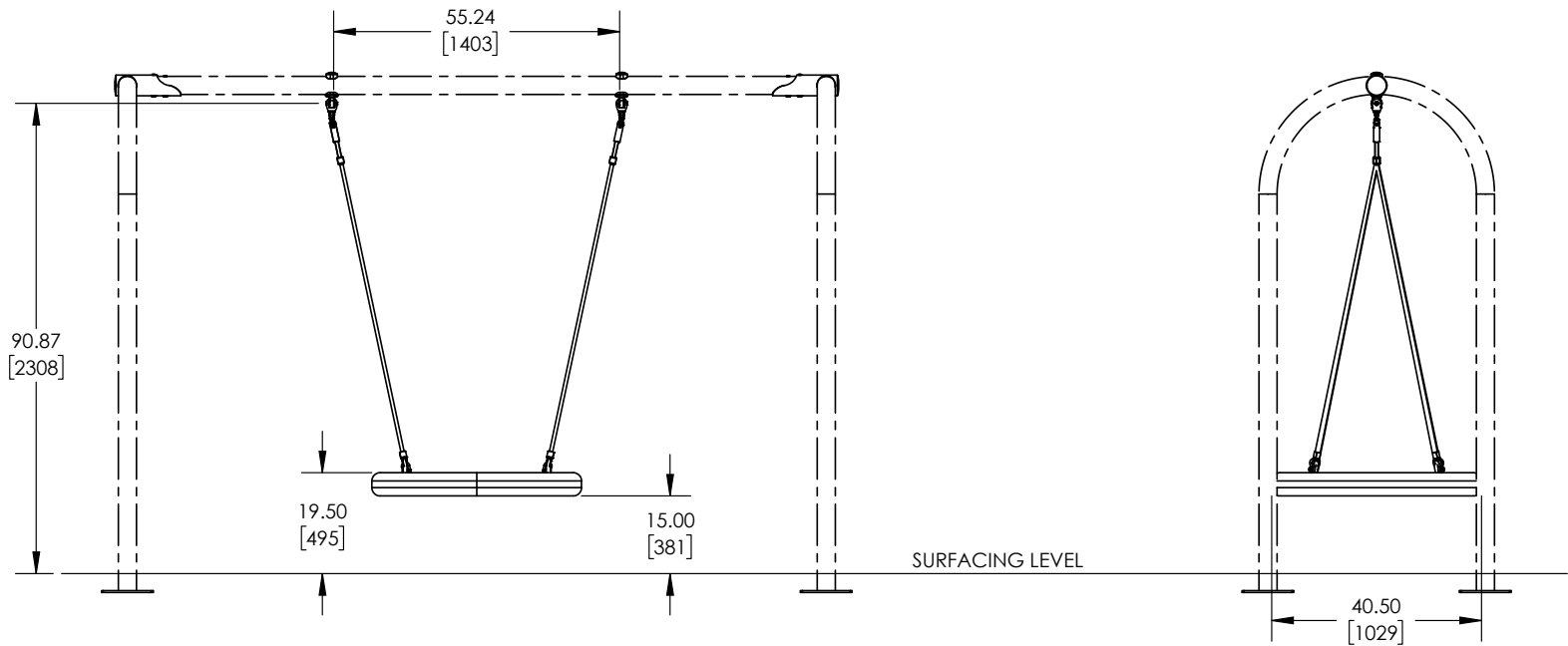
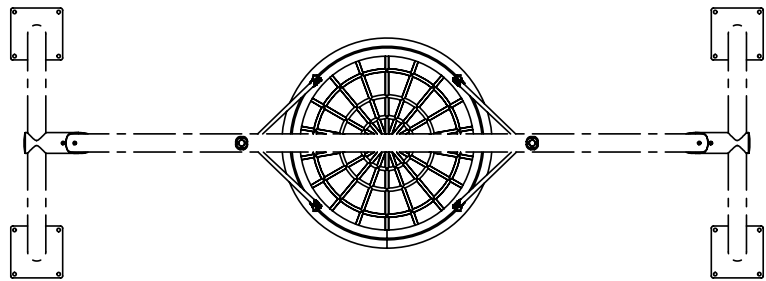
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View

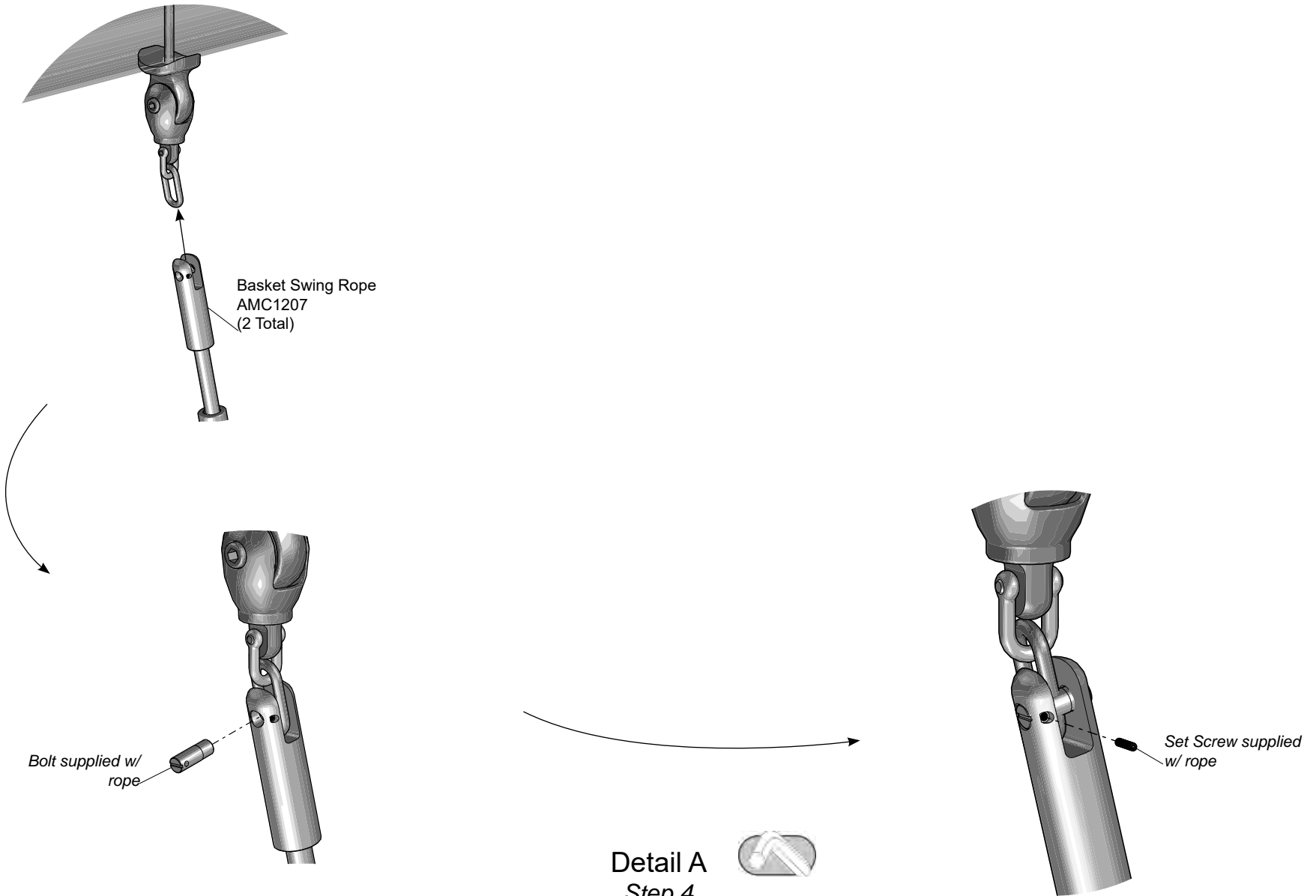


Elevation Views



Installation Instructions

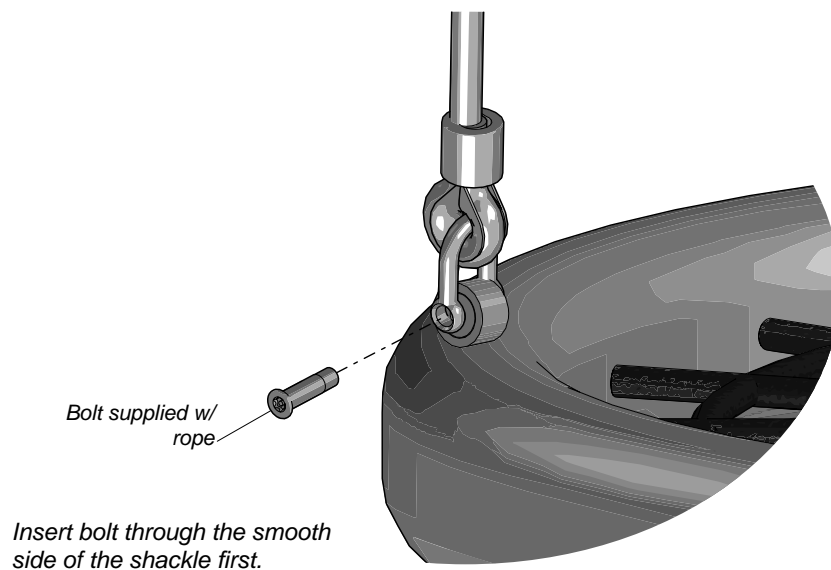
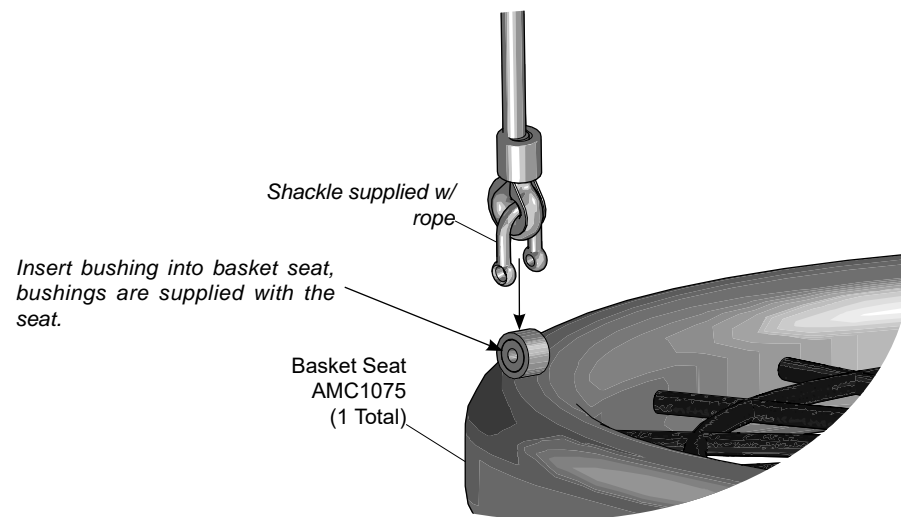
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A
Step 4

Attach the basket swing ropes to the top rail.

Installation Instructions



Detail B Step 4



Attach the basket swing to the basket swing ropes.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Secure the basket swing ropes to the arch frame. See **Detail A**. Insert the rope over the chain. Attach as shown.

Final Details.

Step 4: Attach the basket swing to the basket swing ropes. See **Detail B**. Insert the shackles onto the seat tabs. Attach as shown. Insert bolt through the smooth side of the shackle first. Fully tighten the connection.

Step 5: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.

XX0219 - ROPE BASKET SEAT - ARCH SWING

PART NO.	DESCRIPTION	QTY.
AMC1075	HOOPLA ROPE BASKET - 40.5" O.D. x 5.1"	1
AMC1207	ROPE - BASKET SWING	2
ASY0589	LABEL KIT - 18MTHS - 12YRS ASTM, CSA, FRENCH	1



Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- If during the maintenance process a bolt needs to be removed from a part or parts, it will be necessary to apply a drop of liquid thread lock / loctite to the bolt before reinstallation.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed

Rope

- Inspect the rope for any fraying, wear or loose connectors

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Replacement Parts

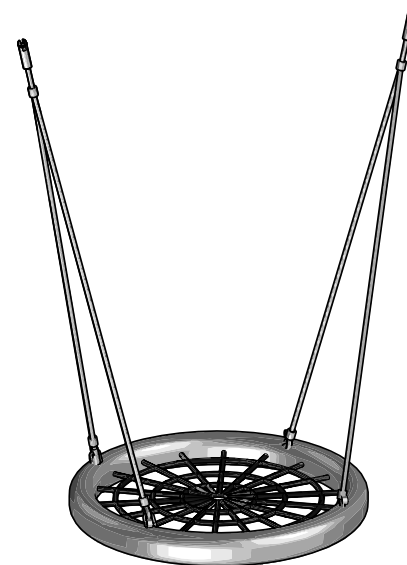
- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance

Playworld Systems®

Model XX0219

Rope Basket Seat - Arch Swing



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___





Assembly View

Refer to the Elevation View for the specific Critical Fall Height for the component.

Installation Instructions

Playworld Systems®


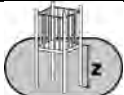





Models XX0260, XX0261 & XX0324

Belt Seat with Swing Chain

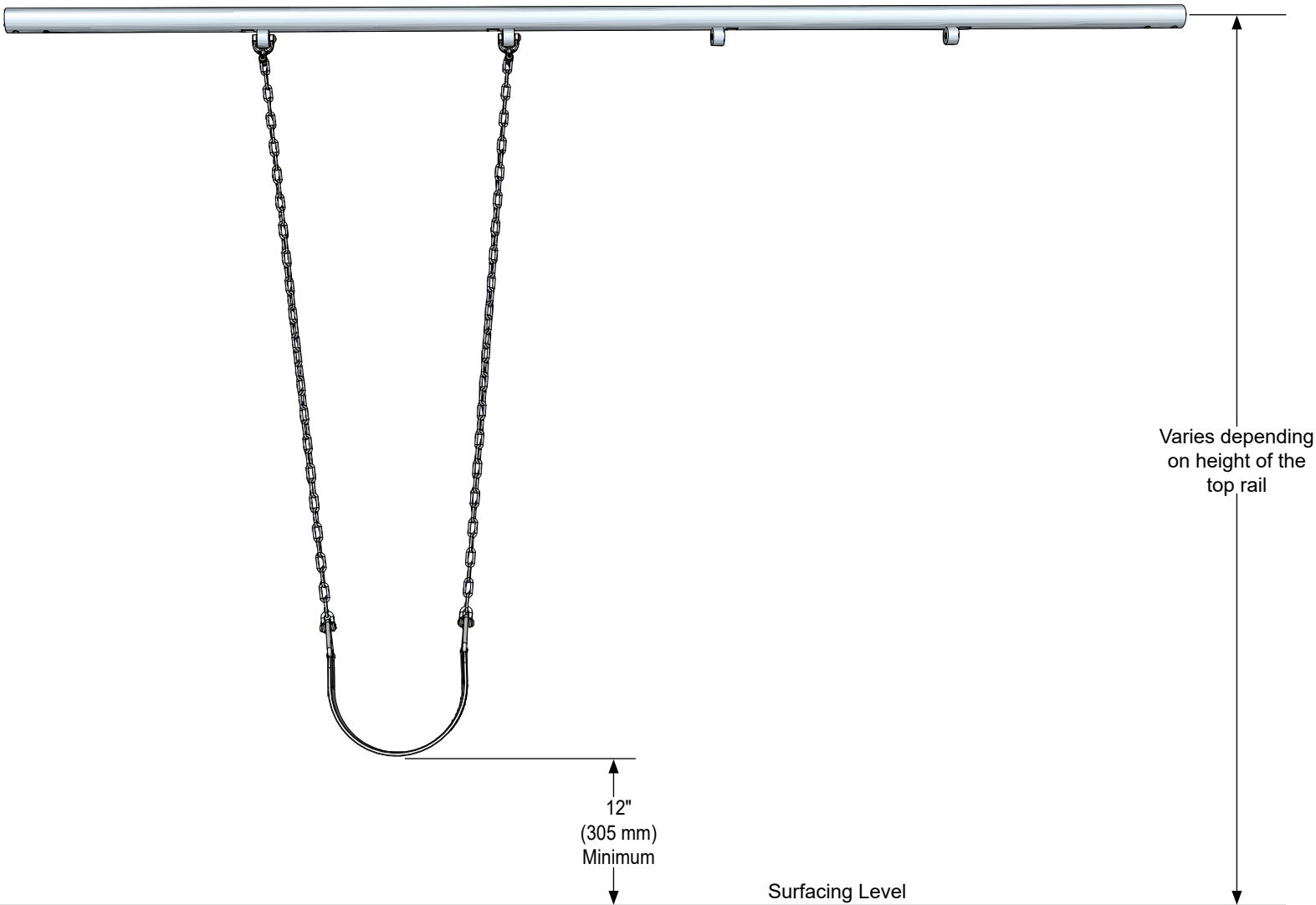
Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.25 hour
 Use Zone: Refer to the swing frame instructions
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

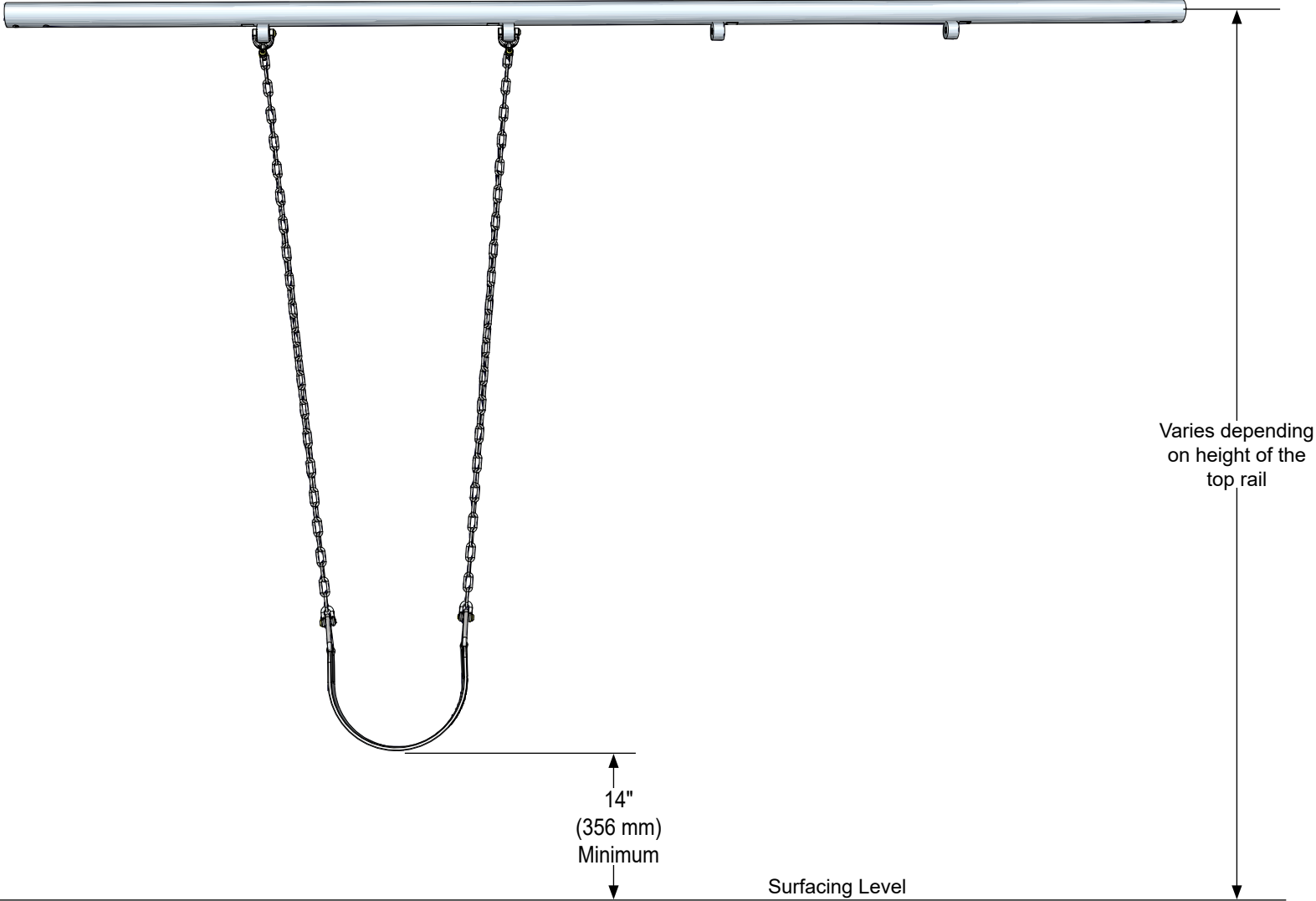


Elevation View
(ASTM/CSA)

Model Number	Critical Fall Height - ASTM/CSA	Top Rail Height
ZZXX0324	7 ft. (2134 mm)	7 ft. (2134 mm)
ZZXX0260	8 ft. (2440 mm)	8 ft. (2440 mm)
ZZXX0261	10 ft. (3050 mm)	10 ft. (3050 mm)



Installation Instructions



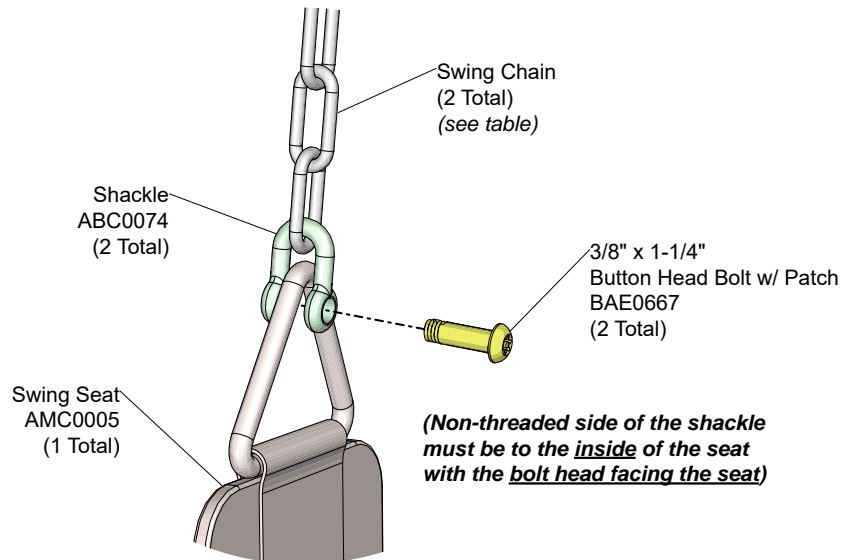
Elevation View
(EN)

Model Number	Critical Fall Height - EN	Top Rail Height
ZZXX0324	1220 mm	7 ft. (2134 mm)
ZZXX0260	1370 mm	8 ft. (2440 mm)
ZZXX0261	1675 mm	10 ft. (3050 mm)



Installation Instructions

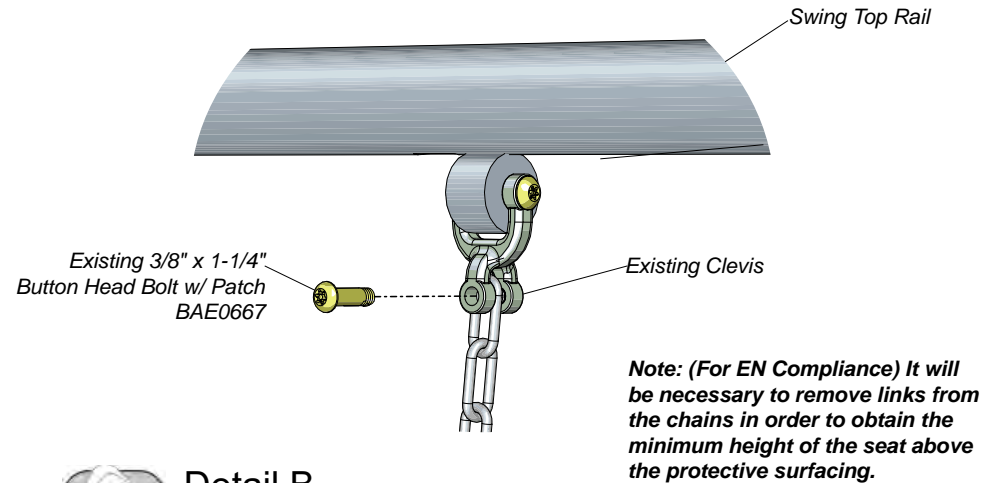
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A Step 3

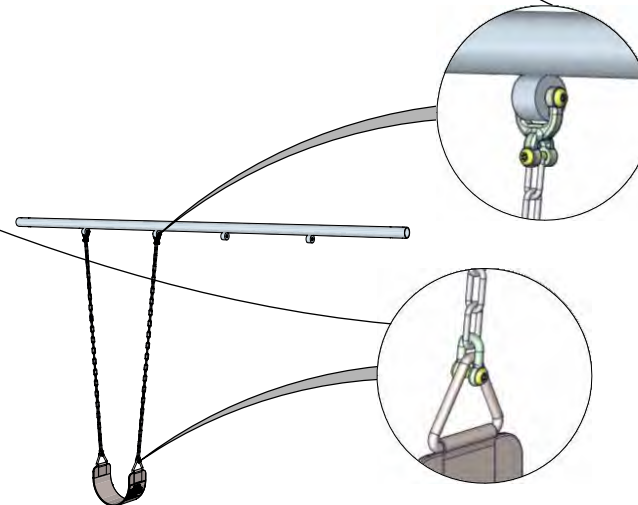
Attach the swing seat to the swing chains.

Model Number	Swing Chain Part No.	Top Rail Height
ZZXX0324	ACN0090	7 ft. (2134 mm)
ZZXX0260	ACN0091	8 ft. (2440 mm)
ZZXX0261	ACN0092	10 ft. (3050 mm)



Detail B Step 4

Attach the swing seat assembly to the existing swing hangers.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the swing seat to the swing chains. See **Detail A**. Attach the seats to the chains as shown. Ensure that the non-threaded side of the shackle is to the inside of the seat. Fully tighten the connections according to tightening torque specifications.

Torque specifications - Nuts and Bolts: Snug tighten and tighten an additional one-half turn.

Step 4: Attach the swing seat assembly to the existing swing hangers. See **Detail B**. Remove the 1-1/4" bolt from the swing hanger clevis with the included wrench. Select the swing seat assembly and place last link of chain between the open end of the clevis and attach as shown. Ensure that the bolt is inserted through the non-threaded side of the clevis and threaded into the opposite side. Fully tighten the connections according to tightening torque specifications.

Note: (For EN Compliance) It will be necessary to remove links from the chains in order to obtain the minimum height of the seat above the protective surfacing.

Step 5: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.



ZZXX0324 - BELT SEAT WITH SWING CHAIN - 7 ft. (2134 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CNCTR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0090	CHAIN - 53.71" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1

ZZXX0260 - BELT SEAT WITH SWING CHAIN - 8 ft. (2438 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CONNECTOR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0091	CHAIN - 65.11" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1

ZZXX0261 - BELT SEAT WITH SWING CHAIN - 10 ft. (3048 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CONNECTOR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0092	CHAIN - 89.01" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1



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www.playworldsystems.com



Swing Seat

- Inspect swing seat for sharp points, breaks, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed.

Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Equipment Maintenance Playworld Systems® Models XX0324, XX0260 & XX0261 Belt Seat with Swing Chain



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

. . . for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect chain and swing seat for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes
P = Pass **F** = Fail
NA = Not Applicable

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment must be installed “Step by Step” per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

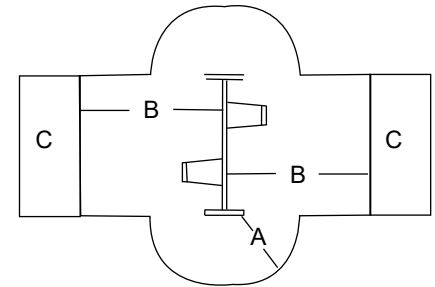
- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.

(ASTM / CSA)

- For belt and rigid swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the height measured from the pivot point above the surfacing material measured from a point directly beneath the pivot on the supporting structure. The use zone on the sides of the swing should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.
- For enclosed infant swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the measurement from the pivot point to the swing seat surface measured from a point directly beneath the pivot on the supporting structure. The use zone on the ends of the swing (support structure) should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.

Belt/Rigid Seat Swing Zones

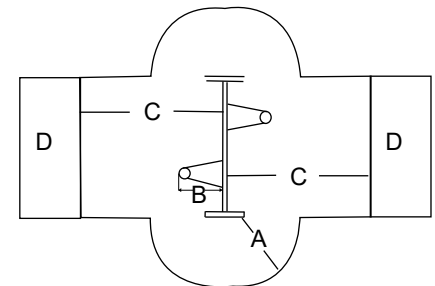
- A =** Side Use Zone
72 in. (1829 mm)
- B =** End Use Zone
Height of Pivot Point
from Surfacing x 2
Both Sides of Top Rail
- C =** No-encroachment Zone
72 in. (1829 mm)



- The use zone on either end of the swing (72 inches [1829 mm]) may be overlapped by the use zone on either end of the another swing (72 inches [1829 mm]). Swing zones on either side of the top rail may **not** be overlapped by the use zones of other play equipment.

Infant Seat Swing Zones

- A =** Side Use Zone
72 in. (1829 mm)
- B =** Distance from Pivot Point
to Swing Seat Surface
- C =** End Use Zone: B x 2
Both Sides of Top Rail
- D =** No-encroachment Zone
72 in. (1829 mm)



Installation Instructions

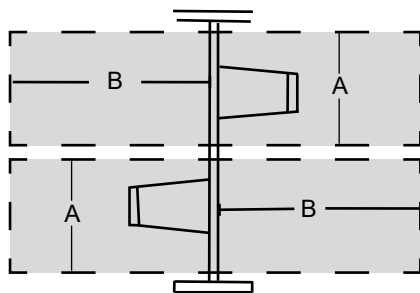
(EN)

- For areas conforming to the EN-1176 Standard, the impact area shall be determined by calculating the horizontal distance where the swing seat is at an 60° arc and adding the appropriate amount of distance based upon the type of protective surfacing. This distance shall be covered by protective surfacing on both sides of the top rail. The protective surfacing shall be appropriate for the maximum fall height of the swing. There is no difference in the calculation based on the type of swing seat.

The impact area on both sides of top rail = $(0.867 \times \text{Distance from pivot point to seat}) + \text{either } 1750 \text{ mm if unitary surfacing or } 2250 \text{ mm if loose-fill surfacing is used}$. There shall be a minimum corridor of 1750 mm centered on each swing seat for the length of the impact area.

Use Zones - EN Compliance

- A =** Width of the corridor centered on the swing seat
1750 mm
- B =** Length of the use zone on both sides of the top rail (8ft)
Tot Seats: 3290 mm for unitary surfaced areas
or 3790 mm for areas covered with loose fill surfacing.
Belt / Rigid Seats: 3510 mm for unitary surfaced areas
or 4010 mm for areas covered with loose fill surfacing



- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.

- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that hard surface warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.
- IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbercy. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Installation Instructions

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

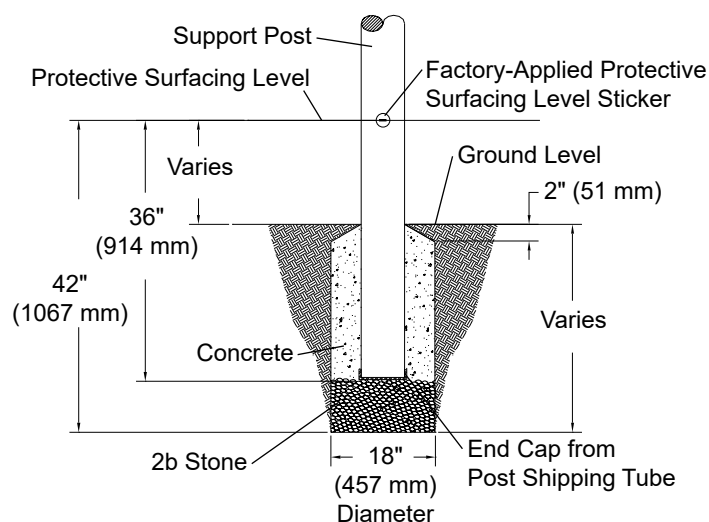
Maintenance

- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

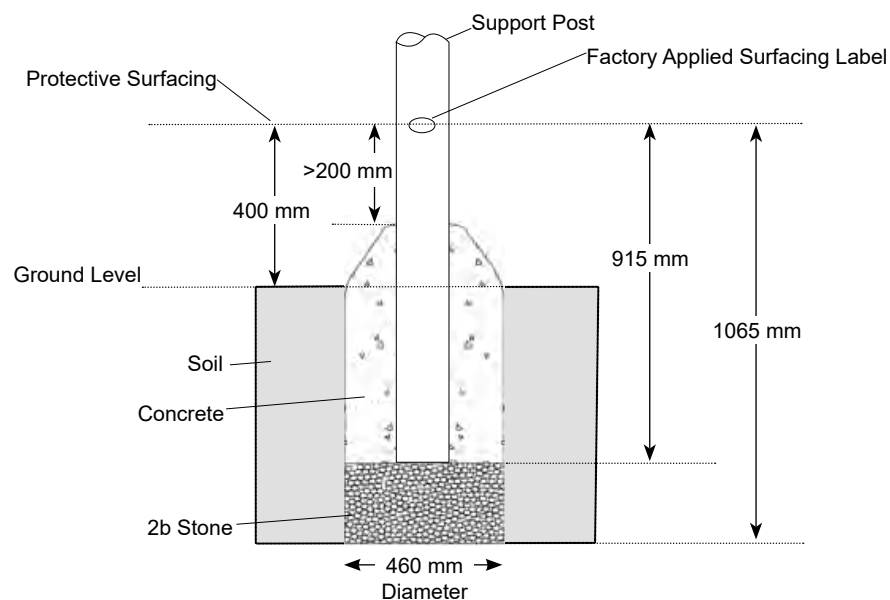
Supervision Guidelines

- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that pre-school-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.

Installation Instructions



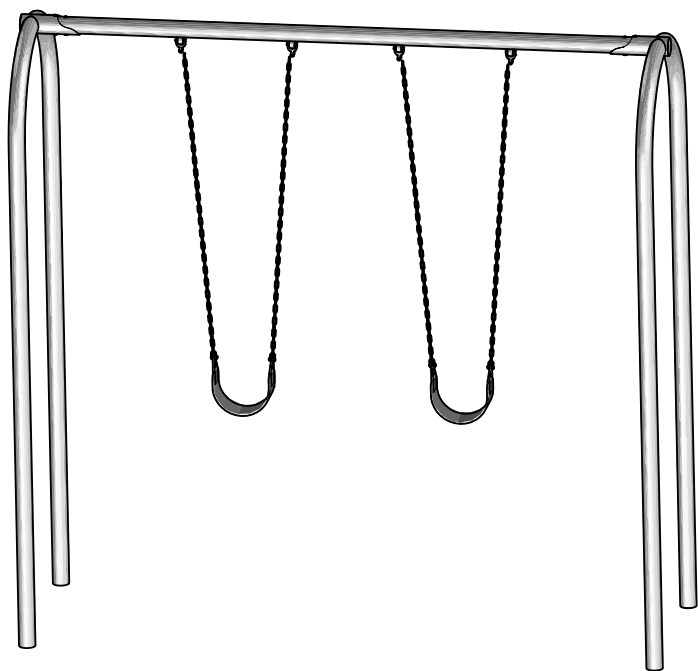
Support Post Footing Detail (ASTM/CSA)



Footing Detail Support Post (EN)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.



Assembly View

Installation Instructions

Playworld Systems® Model XX0930

3-1/2 in. Outside Diameter

2-Unit Arch Swing

8 ft. Top Rail

Installation Preparation

Recommended Crew: Three (3) adults

Installation Time: 3 man-hours

Concrete Required: 0.52 cubic yard (0,40 cubic meters)

Use Zone: Refer to the information on pages 1 & 2

User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

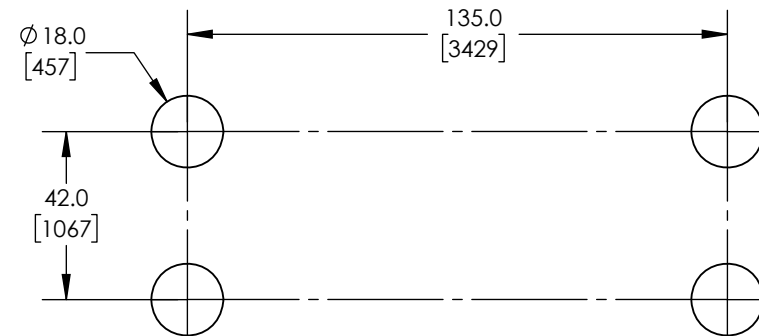
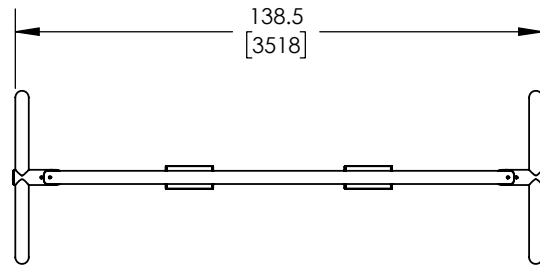
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	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

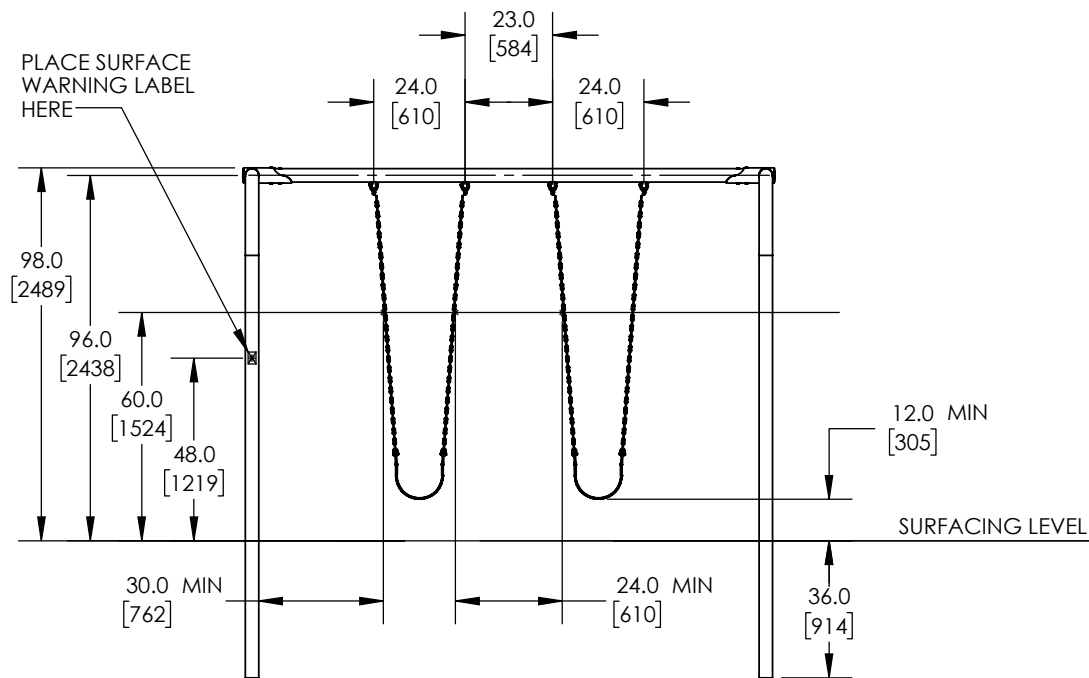
KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

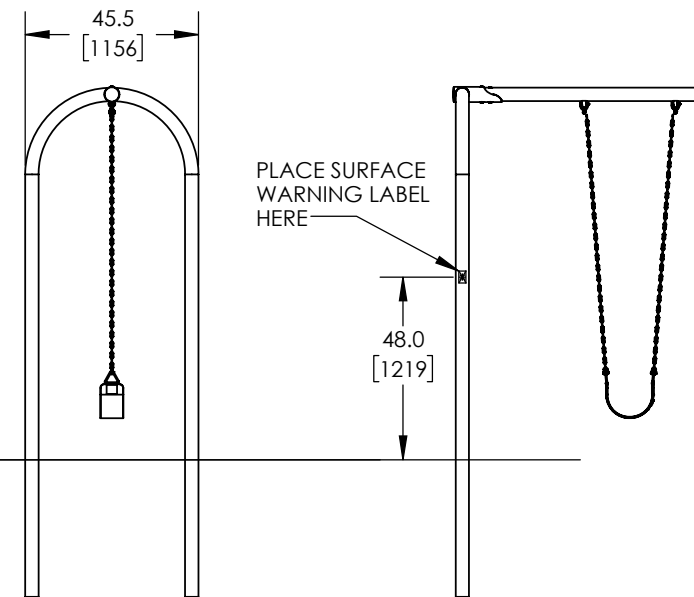
Top View



Footing Diagram

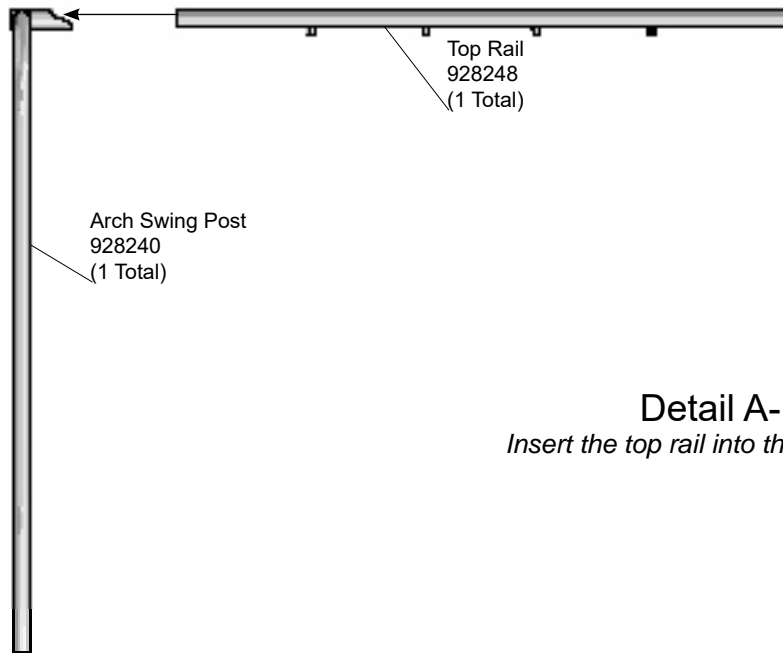


Elevation Views



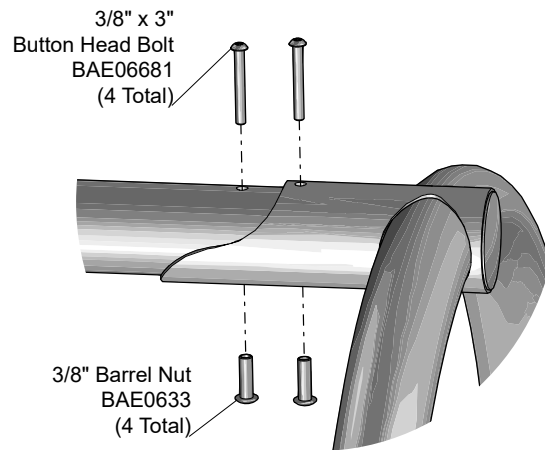
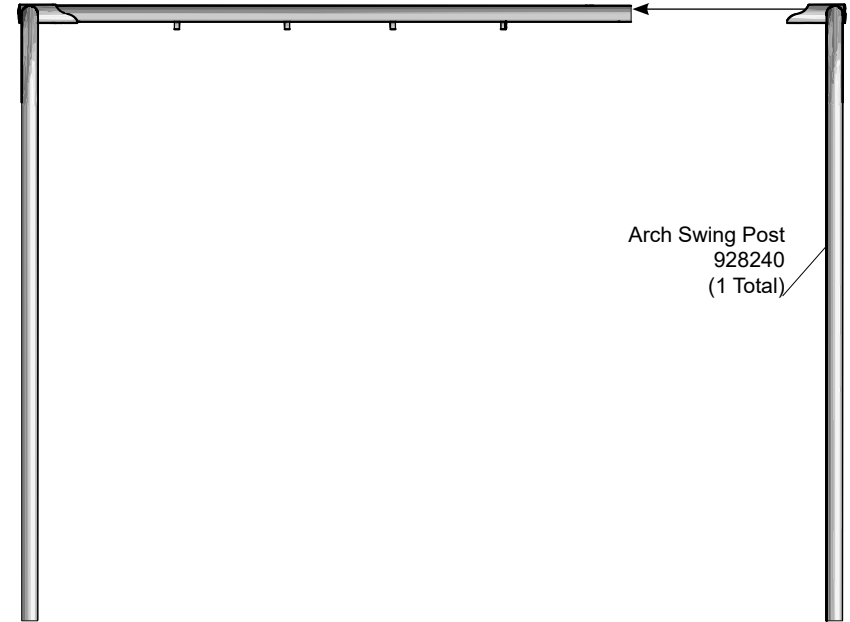
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 9.



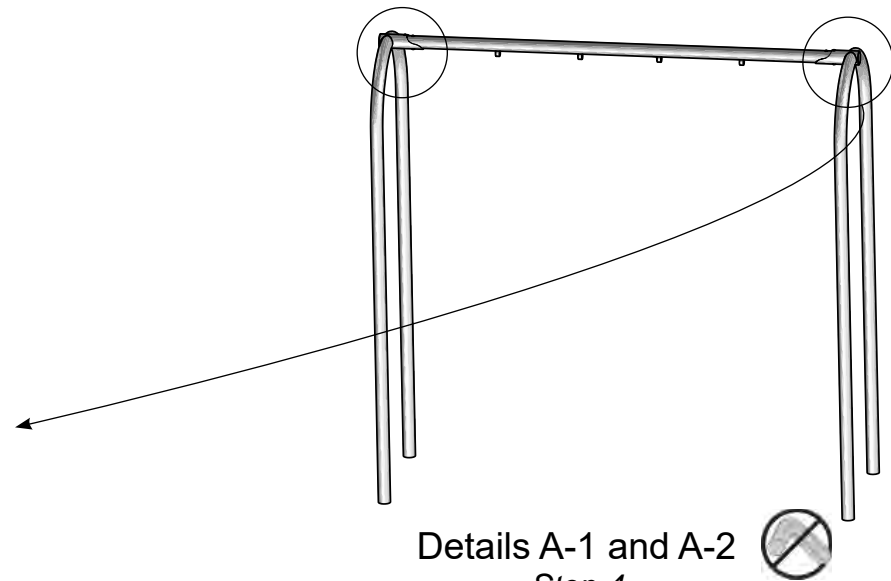
Detail A-1

Insert the top rail into the arch posts.



Detail A-1

Attach the top rail to the arch posts.

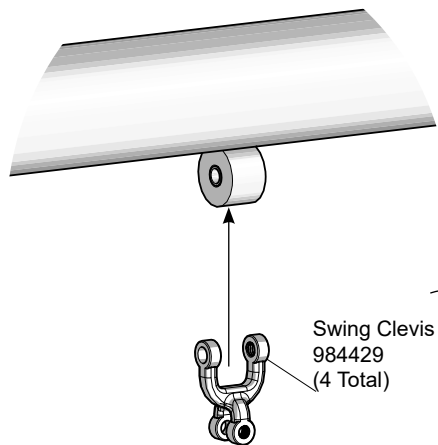


Details A-1 and A-2

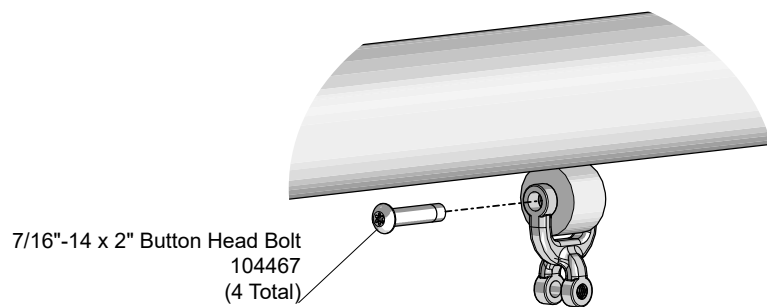
Step 4

Attach the top rail to the arch support posts.

Installation Instructions



Swing Clevis
984429
(4 Total)



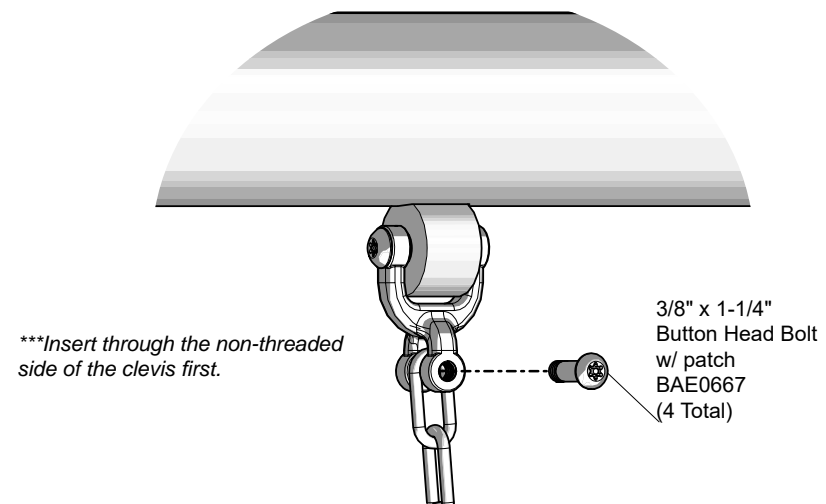
7/16"-14 x 2" Button Head Bolt
104467
(4 Total)

***Insert through the non-threaded
side of the clevis first.



Detail B Step 6

Attach the swing clevises to the top rail.



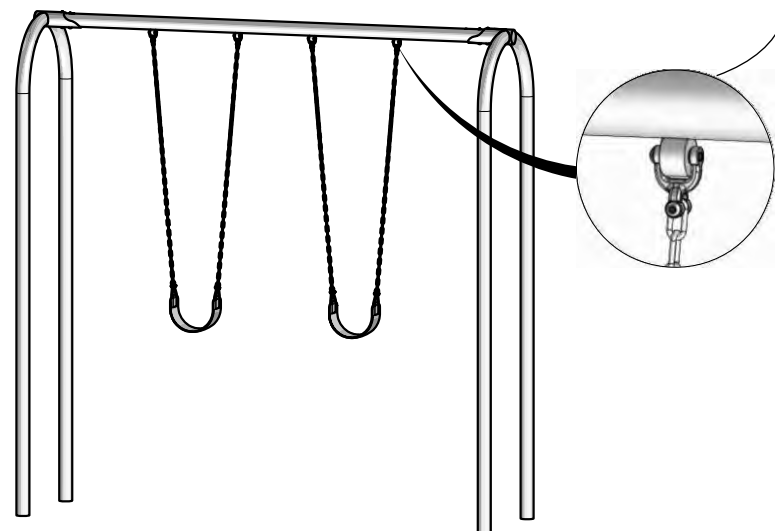
***Insert through the non-threaded
side of the clevis first.

3/8" x 1-1/4"
Button Head Bolt
w/ patch
BAE0667
(4 Total)



Detail C Step 7

Thread the bolt into the clevis for
attachment to a swing seat chain.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Footing Details** on page 4 of this installation document.

Step 4: Attach the top rail to the arch support posts. See **Details A-1** and **A-2**. Place the top rail onto the arch stubs and align the holes. Attach the top rail as shown.

Step 5: Place the swing frame assembly into previously excavated footings. Square and level the swing frame assembly at specified footing depth. Top rail height shall be 96 in. (2438 mm) as measured from top of the protective surfacing material level to the bottom of the top rail. Fully tighten all bolts. Block and brace for concrete. Fill the footings with concrete to within 2 in. (51 mm) of ground level as shown in the Footing Detail. Allow concrete to harden for 72 hours before proceeding with **Step 6**.

Step 6: Attach the swing clevises to the top rail. See **Detail B**. Position a swing clevis over the tab on the top rail, and align the holes.

Step 7: Thread bolt into the swing clevis. See **Detail C**. The clevis has a threaded and non-threaded side. Insert the bolt through the non-threaded side and thread into the other side of the clevis.

Note: The bolt will need to be removed to insert the chain for the swing seat.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 9: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the equipment at eye level.

Step 10: See Swing Seat Installation Instruction sheet for swing seat attachment. Swing seats are ordered separately.

Step 11: Apply the Surfacing Warning labels as shown in the Elevation Views. Labels are to be plainly visible according to current playground equipment guidelines.

XX0930 - 3-1/2 in. O.D. STEEL ARCH SWING WITH 8 ft. TOP RAIL

PART NO.	DESCRIPTION	QTY.
104467	BOLT - 7/16"-14 x 2.00" BUTTON HEAD PART THREADED	4
928240	FRAME - 3.50" STEEL ARCH SWING	2
928248	TOP RAIL - 3.50" O.D. x 126.58"	1
984429	CLEVIS	4
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	2
BAE0633	NUT - 3/8"-16 x 1.63 BARREL	4
BAE0667	BOLT - 3/8" X 1-1/4" BUTTON HEAD W/ NYLON PATCH	4
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	4



The world needs play.

For Customer Service, Call
800-233-8404 or
570-522-9800 OUTSIDE U.S.
1000 Buffalo Road • Lewisburg, PA 17837
www.playworld.com



Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
Set Screws: Snug tighten and tighten an additional full turn.
- Inspect drive rivets to insure they are intact and secure.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.
To repair the deck/stair/ladder/step-up bracket coating, contact the Playworld Systems' Customer Service Department for a coating repair touch-up kit.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

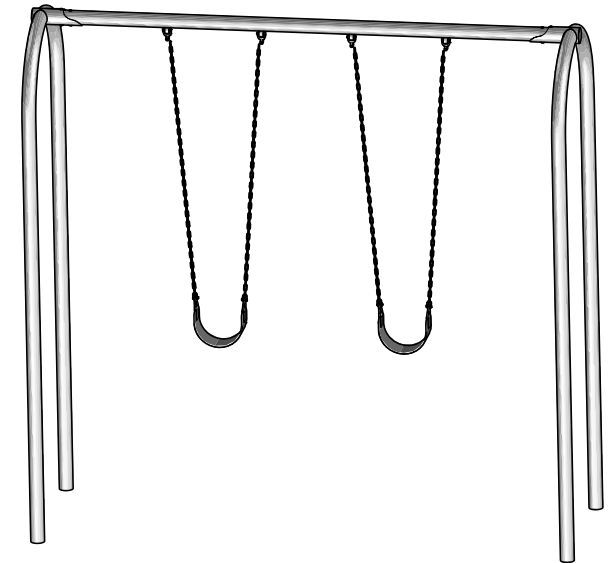
Equipment Maintenance

Playworld Systems®

3-1/2 in. Outside Diameter

2-Unit Arch Swing

8 ft. Top Rail





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www.playworld.com

Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect surfacing to insure proper depth and distribution.	High			
Inspect clamps for tightness and damage.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes
P = Pass **F** = Fail
NA = Not Applicable

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment must be installed “Step by Step” per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

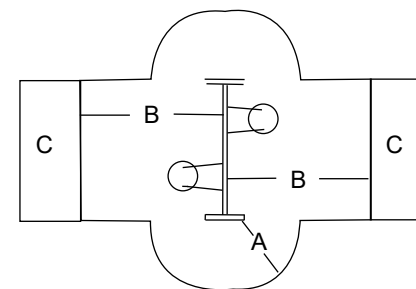
- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.

(ASTM / CSA)

- For the multi-user seat, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the height measured from the pivot point above the surfacing material measured from a point directly beneath the pivot on the supporting structure. The use zone on the sides of the swing should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.
- The use zone on either end of the swing (72 inches [1829 mm]) may be overlapped by the use zone on either end of the another swing (72 inches [1829 mm]). Swing zones on either side of the top rail may **not** be overlapped by the use zones of other play equipment.

Multi-User Seat Swing Zones

- A =** Side Use Zone
72 in. (1829 mm)
- B =** End Use Zone
Height of Pivot Point
from Surfacing x 2
Both Sides of Top Rail
- C =** No-encroachment Zone
72 in. (1829 mm)



Installation Instructions

- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.
- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that hard surface warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.
- **IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbercy. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**
- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Installation Instructions

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

Maintenance

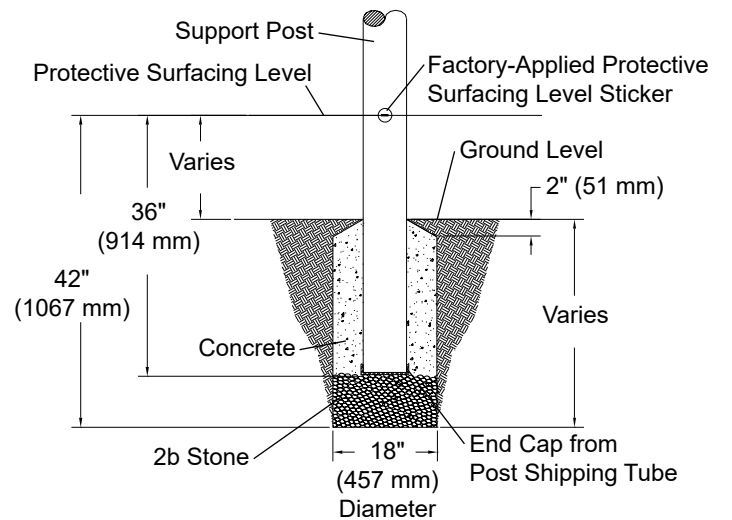
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- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that pre-school-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.



Installation Instructions

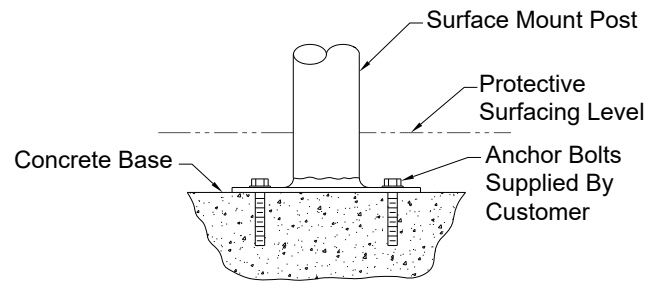


Support Post Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Some support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

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intentionally left blank.



Installation Instructions

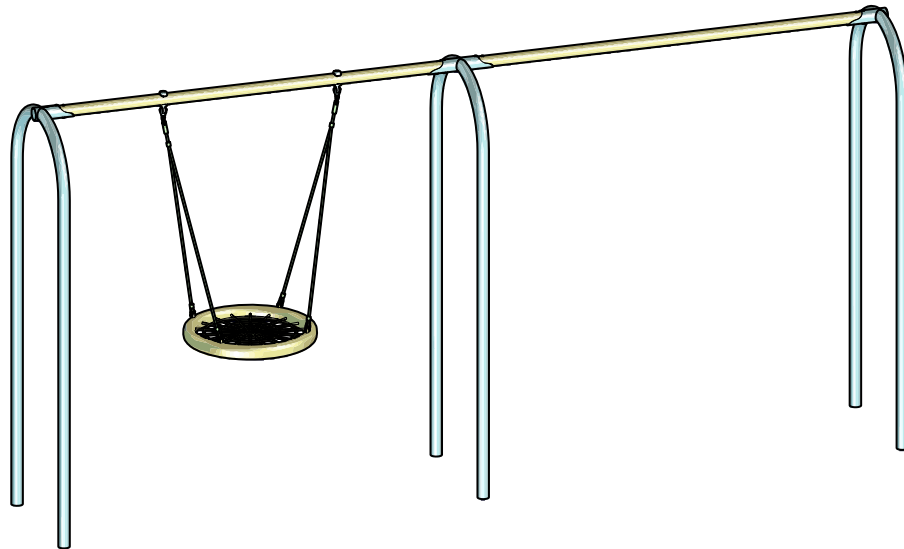
Playworld Systems®

Models XX0940 and XX0940S

3-1/2 in. O.D. Arch Swing Add-a-Bay (Multi-User)
In-ground and Surface Mount








Installation Preparation

Recommended Crew: Three (3) adults
Installation Time (In-Ground): 2 man-hours
Installation Time (Surface Mount): 1.5 man-hours
Concrete Required: 0.26 cubic yard (0,20 cubic meters)
Use Zone: Refer to the information on page 1
User Group Age (years): ASTM: 2-12, CSA: 1.5-12



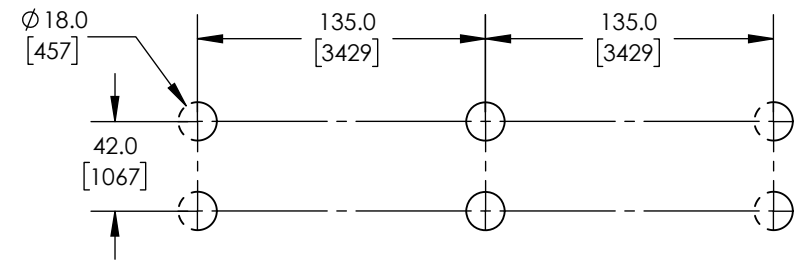
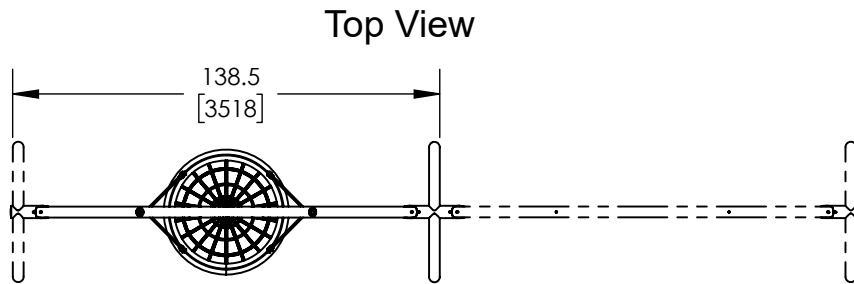
*Assembly View (representative structure)
Swing Seat Sold Separately*

ICON KEY

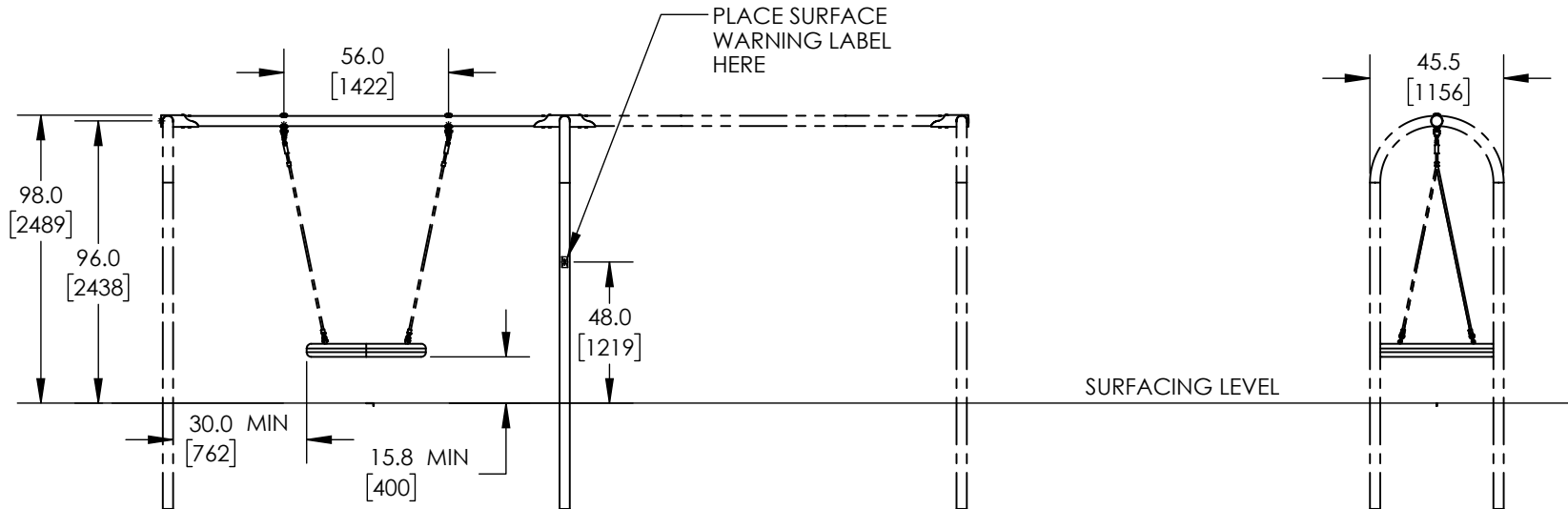
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram
(Both Models)

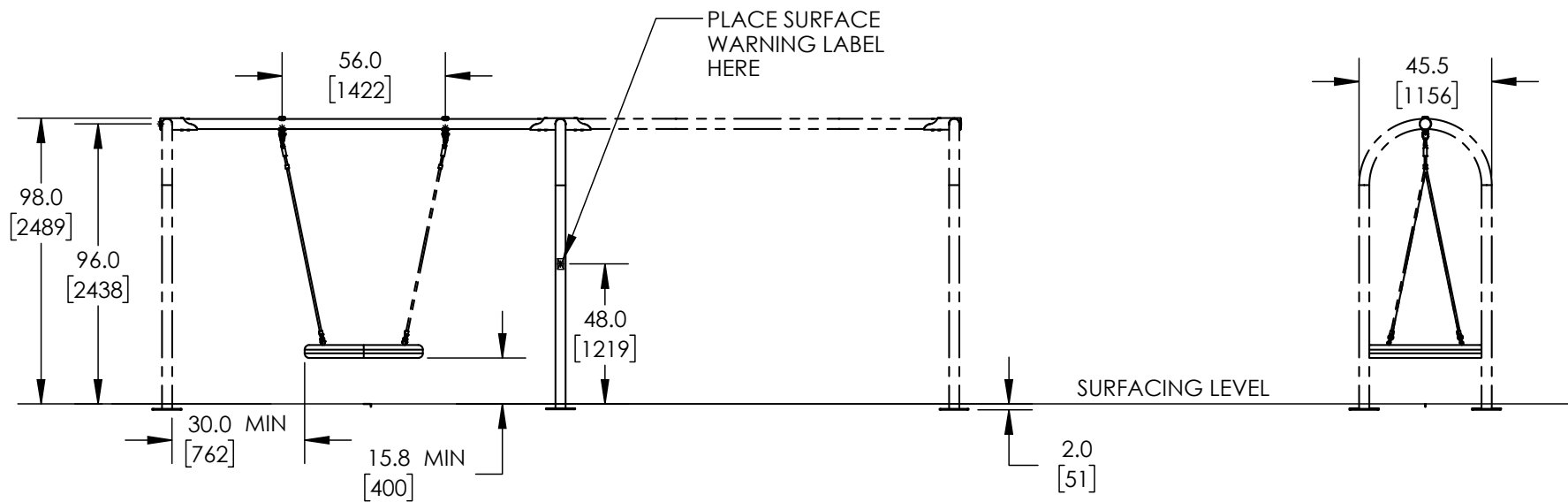
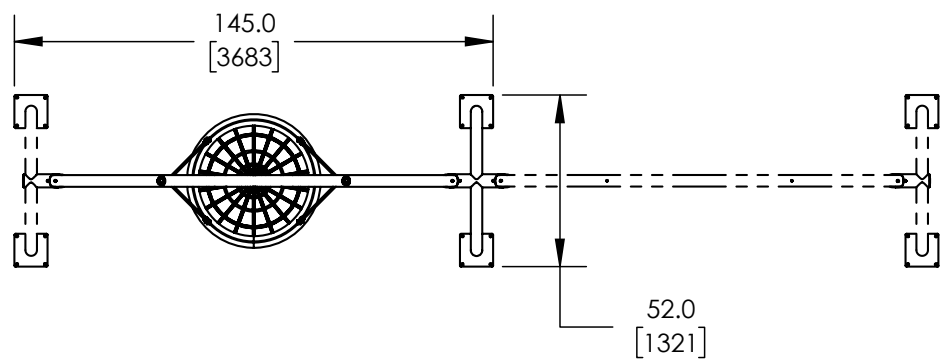


Elevation Views
XX0940

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View

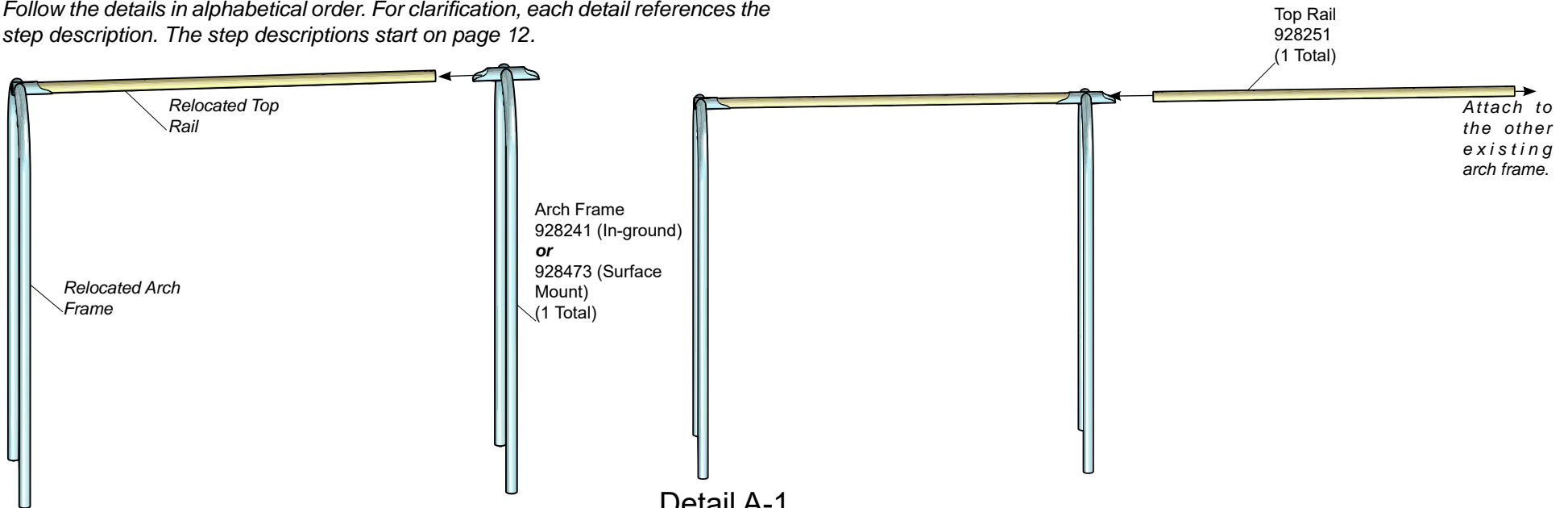


Elevation Views
XX0940S

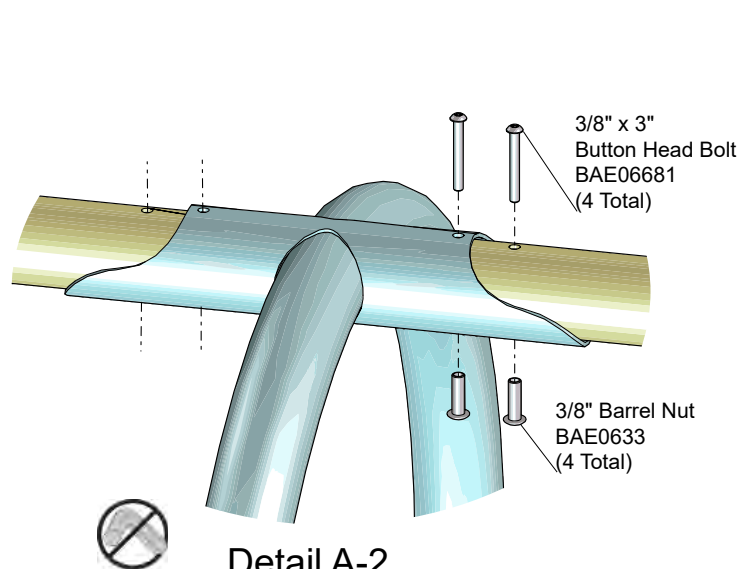


Installation Instructions

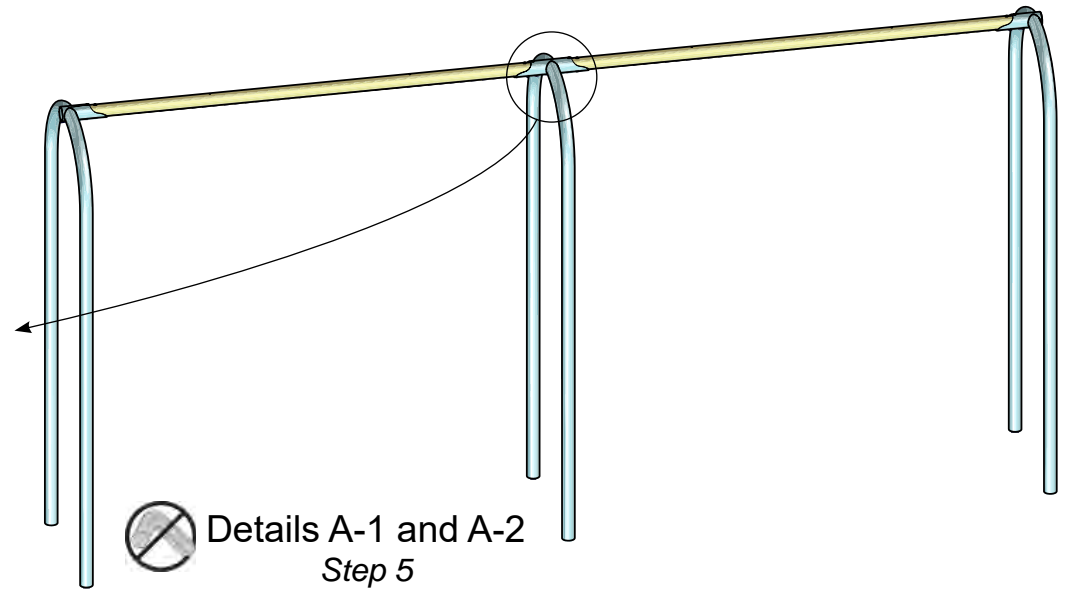
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 12.



Insert the top rails into the middle arch frame.

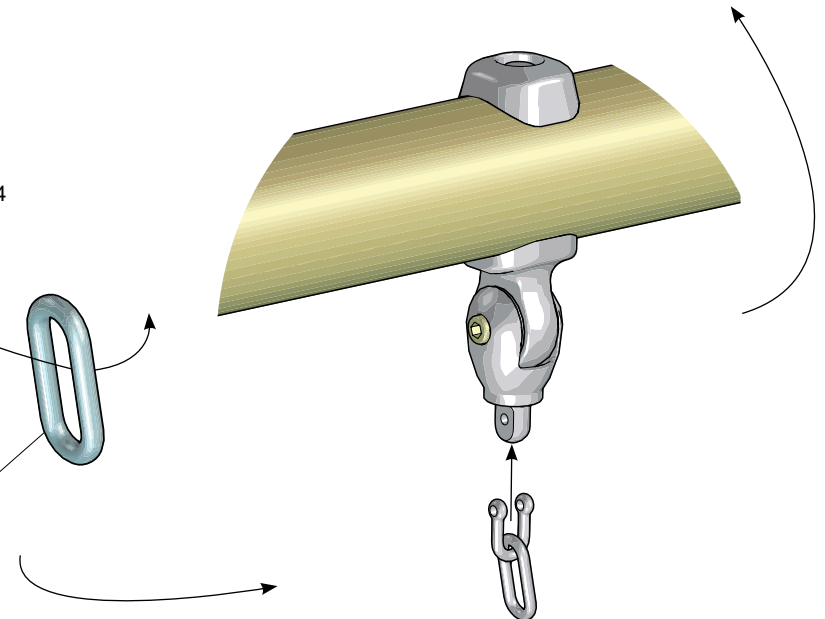
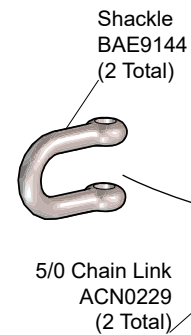
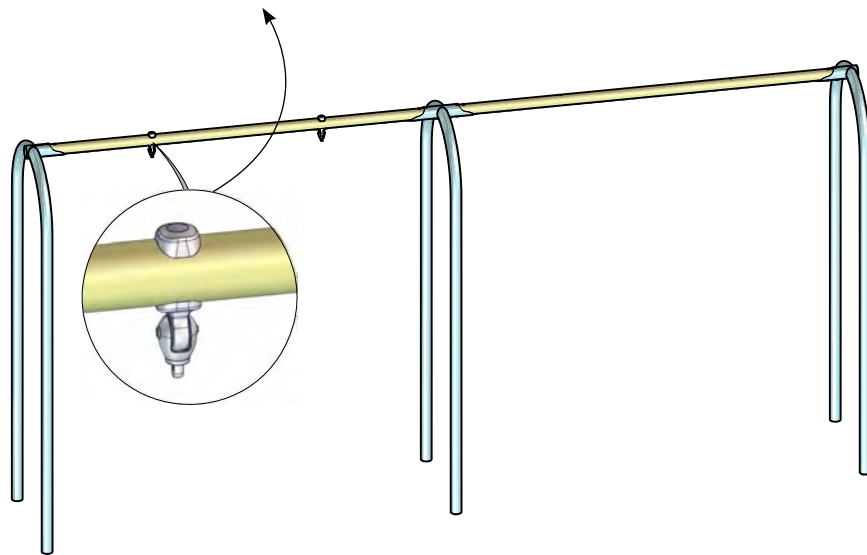
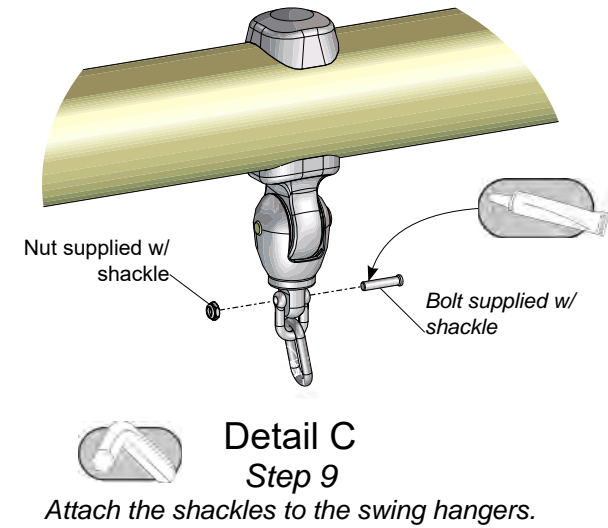
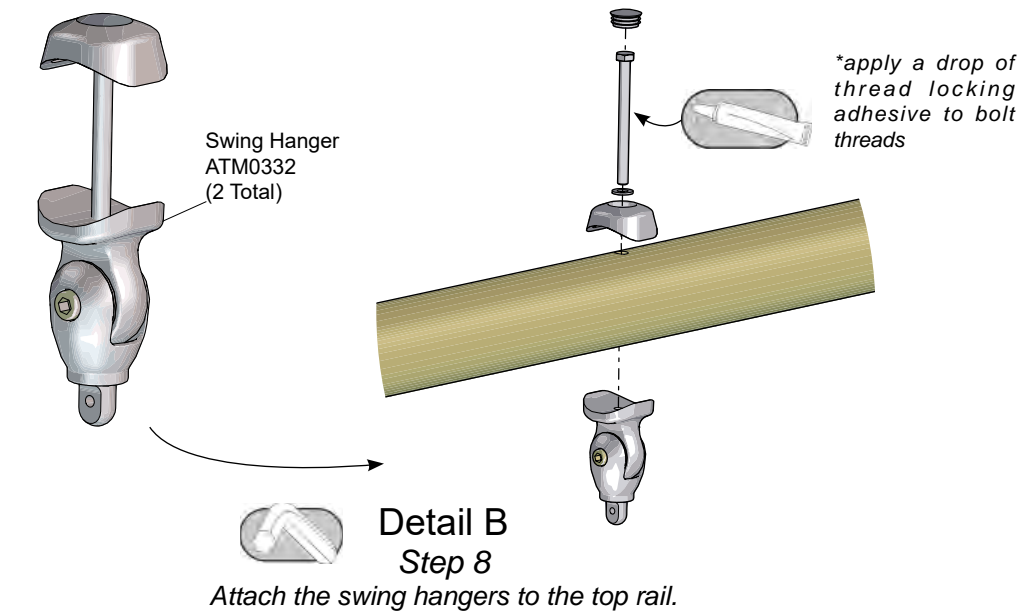


Attach the top rail to the middle arch frame.



Attach the top rail to the arch frames.

Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare footings as shown in the **Footing Details** on pages 4 and 5 of this installation document.

Existing Swing

Step 4: Applies to adding an additional bay to a pre-existing product, remove (1) one of the existing arch supports by unscrewing and removing the connection to the top rail. Unbolt the support post from the existing footing and transplant it to the opposite end of the bay addition as shown in the **Footing Diagram**. After completing, proceed to *Step 5*.

Step 5: Attach the top rails to the middle arch frame (new and existing). See **Details A-1 and A-2**. Place the top rails onto the arch stubs and align the holes. Attach the top rails as shown.

Step 6: Re-attach the arch support to the opposite end of the frame using the existing hardware. Refer to the documentation that came with your original swing frame.

Step 7 (In-ground): Place the swing frame assembly into previously excavated footings. Square and level the swing frame assembly at specified footing depth. Top rail height shall be 96 in. (2438 mm) as measured from top of the protective surfacing material level to the bottom of the top rail. Fully tighten all bolts. Block and brace for concrete. Fill the footings with concrete to within 2 in. (51 mm) of ground level as shown in the Footing Detail. Allow concrete to harden for 72 hours before proceeding with **Step 8**.

Step 7 (Surface Mount): Place the swing frame assembly onto the previously prepared footings and plumb and level. Top rail height shall be 96 in. (2438 mm) as measured from top of the protective surfacing material level to the bottom of the top rail. Fully tighten all fasteners according to tightening torque specifications. Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 8: Attach the swing hangers to the top rail. See **Detail B**. Using the hardware supplied with the hangers, attach to the top rail as shown.

Step 9: Attach the shackles to the swing hangers. See **Detail C**. Place the shackle in the swing chain link, align the holes in the shackle with the swing hanger, and attach as shown.

Final Details.

Step 10: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

Step 11: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the equipment at eye level.

Step 12: See Seat Installation Instruction sheet for basket or hoopla seat attachment. Seats are ordered separately.

Step 13: Apply the Surfacing Warning labels as shown in the Elevation Views. Labels are to be plainly visible according to current playground equipment guidelines.

XX0940 - 3-1/2 in. O.D. ARCH SWING ADD-A-BAY (MULTI-USER)

PART NO.	DESCRIPTION	QTY.
928241	FRAME - 3.50" STEEL ARCH SWING (ADD BAY)	1
928251	TOP RAIL - 3.50" O.D. x 126.58" (BASKET)	1
ACN0229	CHAIN - 2.02" x # 5/0 (1 LINK)	2
ATM0332	SWING JOINT COMP	2
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0633	NUT - 3/8"-16 x 1.63" BARREL	4
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	4
BAE9143	9/64" HEX KEY WRENCH	1
BAE9144	1/4" SS SHACKLE w/BOLT AND LOCKNUT	2

XX0940S - 3-1/2 in. O.D. ARCH SWING ADD-A-BAY (MULTI-USER) - SURFACE MOUNT

PART NO.	DESCRIPTION	QTY.
928251	TOP RAIL - 3.50" O.D. x 126.58" (BASKET)	1
928473	FRAME - 3.50" STEEL ARCH SWING (ADD BAY) (SM)	1
ACN0229	CHAIN - 2.02" x # 5/0 (1 LINK)	2
ATM0332	SWING JOINT COMP	2
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0633	NUT - 3/8"-16 x 1.63" BARREL	4
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	4
BAE9143	9/64" HEX KEY WRENCH	1
BAE9144	1/4" SS SHACKLE w/BOLT AND LOCKNUT	2



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800-233-8404 or
570-522-9800 OUTSIDE U.S.
1000 Buffalo Road • Lewisburg, PA 17837
www.playworld.com



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Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

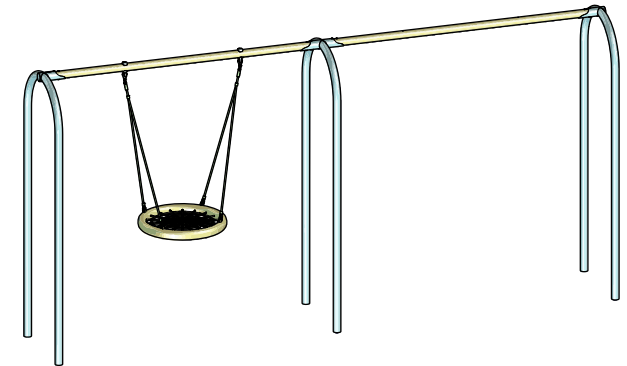
Equipment Maintenance

Playworld Systems®

Models XX0940 and XX0940S

3-1/2 in. O.D. Swing - Add-a-Bay
(Multi-User)

In-ground and Surface Mount





The world needs play.

For Customer Service, Call
800-233-8404 or
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www.playworld.com

Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect surfacing to insure proper depth and distribution.	High			
Inspect clamps for tightness and damage.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

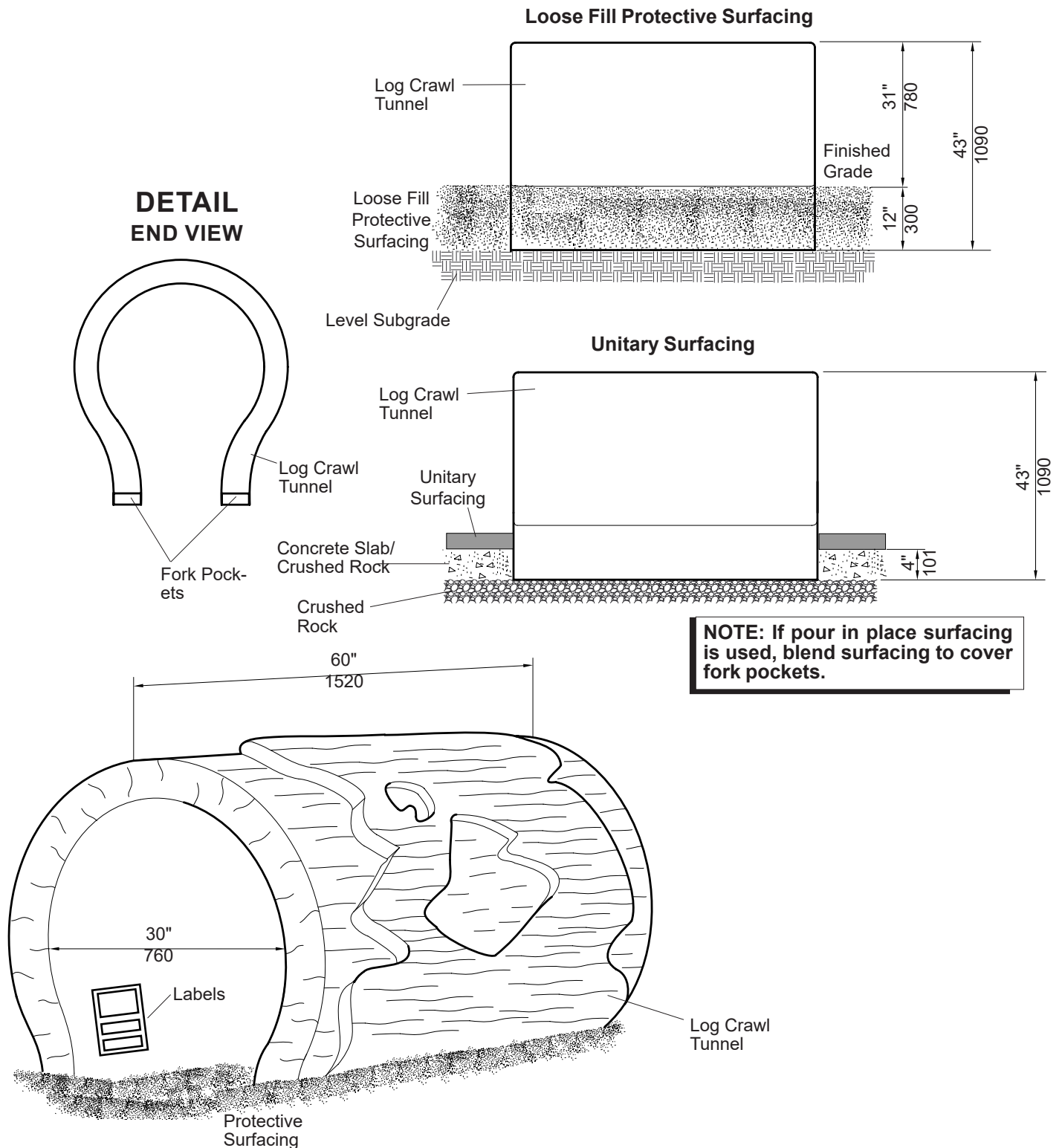
Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___





Play Naturally™

More Fun

173594 Log Crawl Tunnel

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

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Document #25494600

Parts List

Part#	Description	Qty.
175710	Log Crawl Tunnel.....	1
224345	Warning Label Package 2-12.....	1
183064	Label Warning	1
200331	Label 2-5 Yrs	1
200332	Label 2-12 Yrs.....	1
200333	Label 5-12 Yrs.....	1

Log Crawl Tunnel Assembly:

Weldment comprised of 1.900" (48,26 mm) O.D. RS20 (.090"-1.100") (2,29 mm-2,54 mm) wall galvanized steel tubing, $\frac{3}{16}$ " HRPO steel plate and 7" x 3" x $\frac{3}{16}$ " (178 mm x 76 mm x 4,75 mm) wall rectangular tube. **(Log Crawl Tunnel assembled)** Glass reinforced wet cast solid pour concrete product. Finish: Latex paint made for concrete, natural colors.

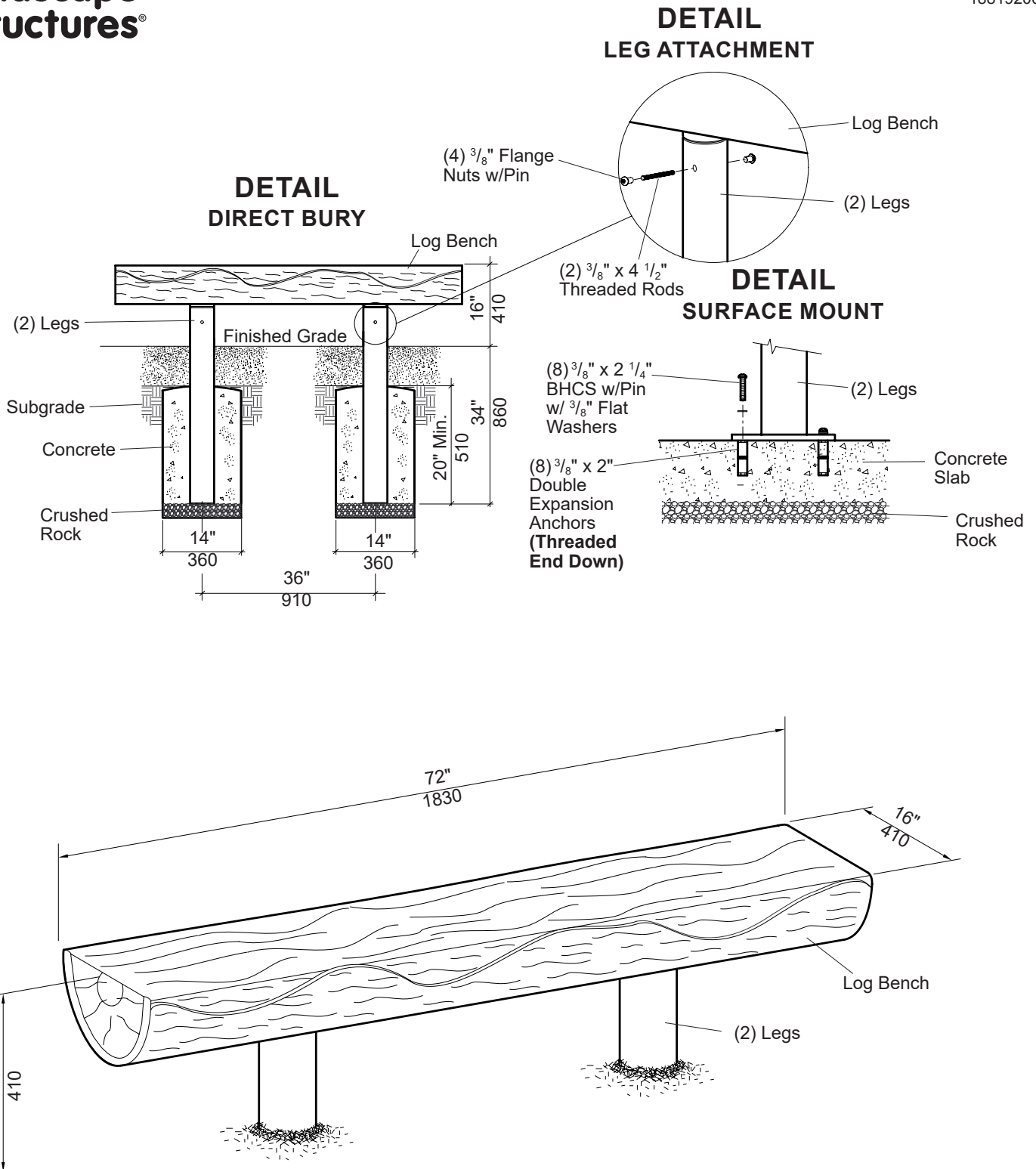
Installation Time: Approx. $\frac{1}{4}$ man hour
Weight: 2010 lbs.
Min. Use Zone: 6' (1830 mm)
Actual Size: Log measures 60" long x 43" high (1520 mm x 1090 mm high)
Fall Height: 41" (1040 mm) Max.

Installation Instructions

- 1) The log crawl tunnel must be installed over an area of stable soil.

Warning: Never crawl under any part of The Log Crawl Tunnel especially when it is only supported by a forklift.

- 2) To unload the log crawl tunnel, a "Lull" type material handler with at least an 4,000 lb. capacity is recommended. Maximum fork extension size is 2 $\frac{1}{2}$ " high x 6 $\frac{1}{2}$ " wide with no maximum length. **NOTE: At least 2 people are recommended for the log crawl tunnel installation. One person to operate the material handling equipment and one person to spot for the operator.**
- 3) The log crawl tunnel should be placed on stable soil. Pick up the log crawl tunnel by inserting the material handling forks into the forklift pockets. Be very careful to keep the log crawl tunnel level to the ground when raising or lowering. Do not contact the concrete face of the log crawl tunnel with material handler forks, chipping can occur.
- 4) Apply the warning label and age label for the intended age range.
- 5) Install protective surfacing before users are allowed to play on the structure.
- 6) **NOTE: After installation if Touch-up/Repairs are needed, contact Landscape Structures at 1-888-574-4678.**



Play Naturally™

Site Furnishings

173595 Log Bench

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

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Document #27139400

Parts List

Part#	Description	Qty.
175699	72" Log Bench.....	1
173325	Leg, SM, Brown.....	2
173326	Leg, DB, Brown.....	2
175713	Log Bench Hardware Package	1
100353	$\frac{3}{8}$ " Flange Nut w/Pin, SST.....	4
148081	$\frac{3}{8}$ " x 4 $\frac{1}{2}$ " Threaded Rod, SST.....	2
188103	4-Hole (SM) Hardware Package	2
100199	$\frac{3}{8}$ " x 2 $\frac{1}{4}$ " BHCS w/Pin, SST.....	8
187933	$\frac{3}{8}$ " x 2" Double Expansion Anchor.....	8
100362	$\frac{3}{8}$ " Flat Washer, SST.....	8

DB = Direct Bury

SM = Surface Mount

Log Bench Assembly:

Weldment comprised of 1.900" O.D. RS20 (.090"-.100" wall) galvanized steel tubing and 5.00" O.D. x 11 GA. (.120") galvanized steel tubing. Finish: ProShield®, brown in color. **(Log-fully assembled)** Wet cast solid pour concrete product. Finish: Latex paint made for concrete, natural colors.

Leg: Fabricated from 5.00" O.D. x 11 GA. (.120") galvanized steel tubing. Finish: ProShield, brown in color.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see product

Installation Time: Approx. 1 $\frac{1}{2}$ man hours

Concrete: Approx. 3.56 cu. ft.

Weight: 810 lbs. (DB) 780 lbs. (SM)

Actual Size: Log Bench measures 72" long x 16" wide (1830 mm x 410 mm wide)

Installation Instructions

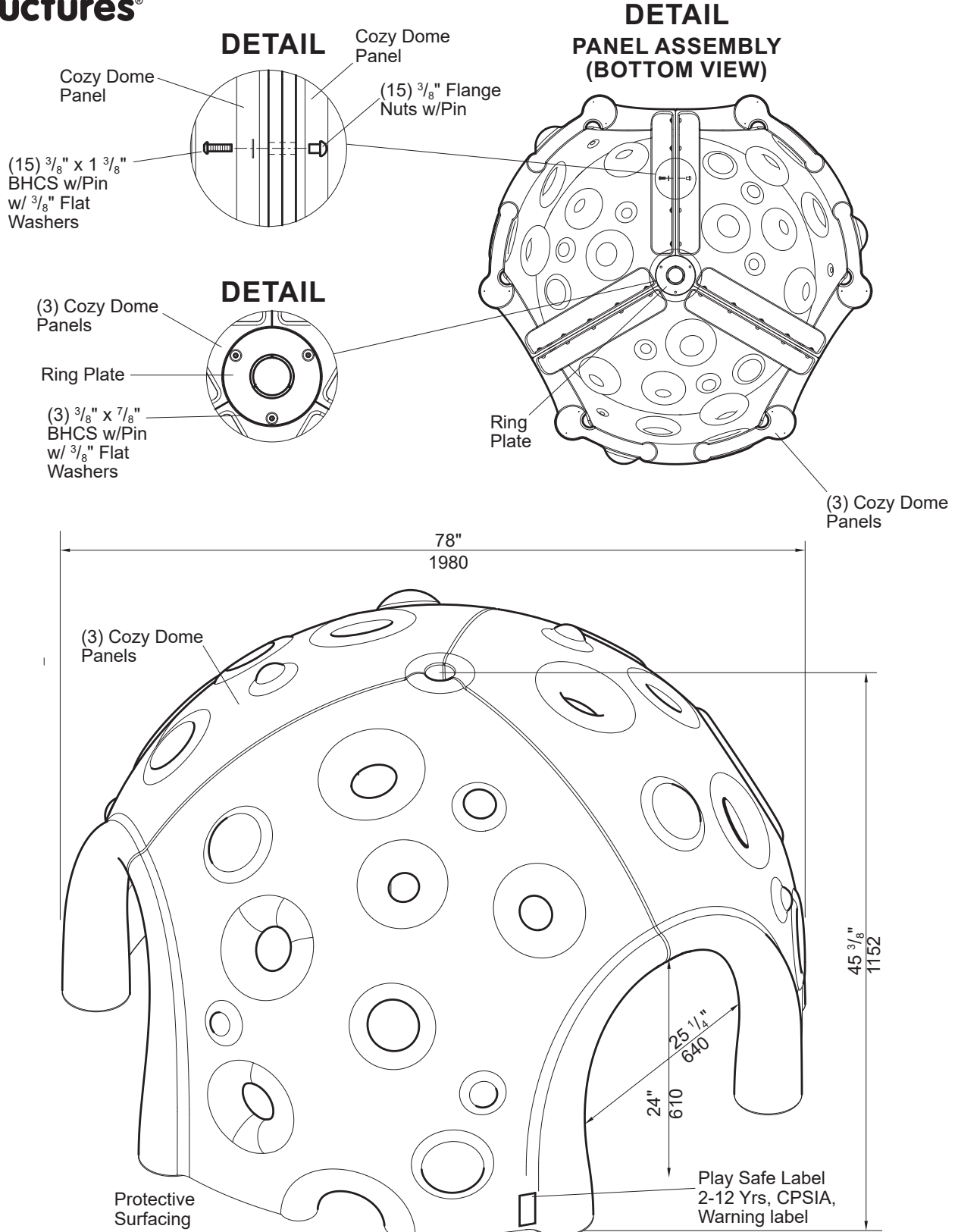
- 1) To unload the log bench, a "Lull" type material handler is recommended.
- 2) **(Direct Bury)** - Dig footing holes, spaced as shown. Attach bench legs to log bench, using $\frac{3}{8}$ " x 4 $\frac{1}{2}$ " threaded rods and $\frac{3}{8}$ " nuts with pin. Place log bench in footing holes and temporarily brace in plumb and level position. Pour concrete footings and let cure for a minimum of 24 hours before removing bracing.

(Surface Mount) - Attach bench legs to log bench, using $\frac{3}{8}$ " x 4 $\frac{1}{2}$ " threaded rods and $\frac{3}{8}$ " nuts with pin. Set log bench in proper position and use a center punch to mark expansion anchor locations.

Move bench aside and drill $\frac{3}{4}$ " x 2 $\frac{1}{4}$ " deep holes into concrete, using a hammer drill and $\frac{3}{4}$ " masonry bit. **NOTE:** *Drill holes perpendicular to the work surface. To assure full holding power, do not ream holes or allow the drill to wobble. Verify hole depth after drilling. Clean holes using compressed air.*

Tap double expansion anchors (**with threaded end down**) into drilled holes. Reposition bench. Fasten bench to expansion anchors, using $\frac{3}{8}$ " x 2 $\frac{1}{4}$ " BHCS w/pin and $\frac{3}{8}$ "

- 3) **NOTE:** After installation if Touch-up/Repairs are needed, contact Landscape Structures at 1-888-574-4678.



Parts List

Part#	Description	Qty.
290660	Cozy Dome Panel, Specify Color.....	3
167705	Ring Plate, Specify Color.....	1
167706	Direct Bury Plate, Specify Color.....	6
169488	Mount Plate, (SM), Specify Color.....	6
169478	1 1/8" O.D. x 1 3/8" Long Spacer Tube, AL.....	12
290950	Cozy Dome Hardware Package for DB	1
100196	3/8" x 7/8" BHCS w/Pin, SST	15
100353	3/8" Flange Nut w/Pin, SST	15
100362	3/8" Flat Washer, SST	30
113027	3/8" x 1 3/8" BHCS w/Pin, SST	15
290951	Cozy Dome Hardware Package for SM	1
100196	3/8" x 7/8" BHCS w/Pin, SST	3
100263	3/8" x 2 3/4" Expansion Anchor	6
100327	3/8" Standard Hex Nut, SST	6
100353	3/8" Flange Nut w/Pin, SST	15
100362	3/8" Flat Washer, SST	24
113027	3/8" x 1 3/8" BHCS w/Pin, SST	15
116695	3/8" x 2" FHCS, SST.....	12

DB = Direct Bury
SM = Surface Mount

Cozy Dome Panel: Rotationally molded from U.V. stabilized linear low

Ring Plate: Fabricated from 1/4" HRPO steel plate. Finish: Pro-Shield®

Mount Plate: Fabricated from 1/4" HRPO steel plate. Finish: Pro-

Direct Bury Plate: Weldment comprised of 2.375" O.D. RS20 (.095"-.105") wall galvanized steel tubing and 1/4" HRPO

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see product

Installation Time: DB - Approx. 4 man hours
SM - Approx. 2 1/2 man hours
Concrete Req.: DB - Approx. 7.85 cu. ft.
Weight: DB - 247 lbs.
SM - 197 lbs.

Area Required: 18' 6" (5,63 m) diameter
Min. Use Zone: 6' (1,82 m)
Fall Height: 46" (1,16 m)

Installation Instructions

(Direct Bury)

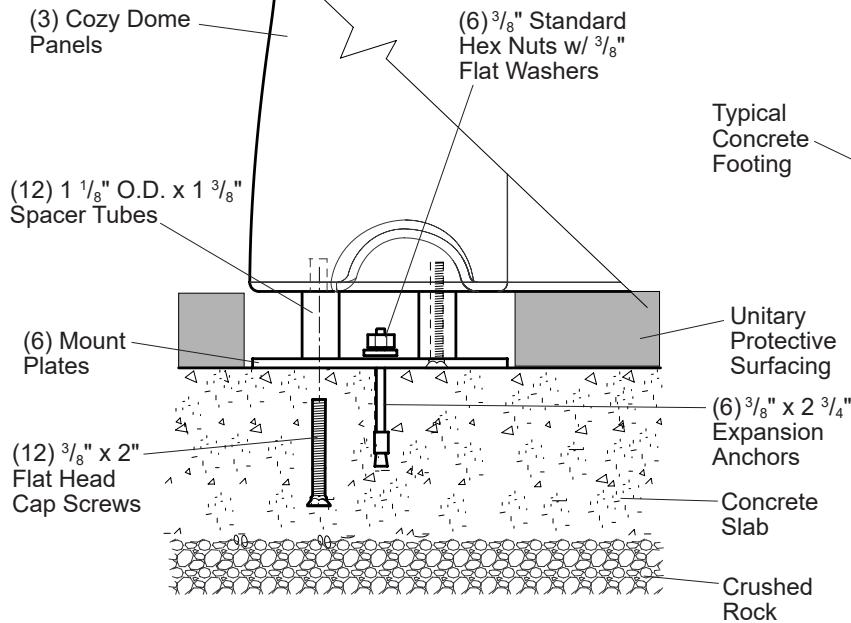
- 1) Refer to the Site Plan for footing locations.
- 2) Attach ring plate to Cozy Dome panels, using 3/8" x 7/8" BHCS w/Pin with 3/8" Assembly Details.
- 3) Attach Cozy Dome panels together, using 3/8" x 1 3/8" BHCS w/Pin with 3/8" washers and 3/8" nuts w/pin. Refer to the Panel Assembly Details. **NOTE:** For ease of installation, insert the 3 interior bolts first, followed by the 3 outer bolts and then the interior bolts.
- 4) Attach direct bury plates to Cozy Dome panels, using 3/8" x 7/8" BHCS w/pin with 3/8"
- 5) With Cozy Dome in position and level, pour concrete footings. Allow concrete to cure a minimum of 72 hours before allowing users to play on the structure.
- 6) Install protective surfacing before users are allowed to play on the structure.

(Surface Mount)

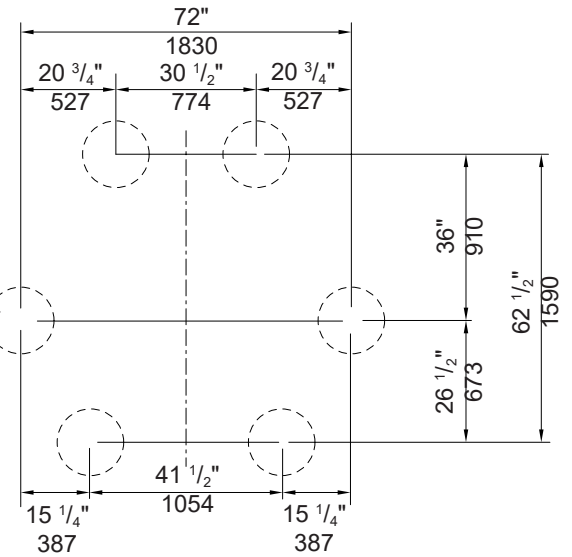
- 1) Attach ring plate to Cozy Dome panels, using 3/8" x 7/8" BHCS w/Pin with 3/8" Assembly Details.
- 2) Attach Cozy Dome panels together, using 3/8" x 1 3/8" BHCS w/Pin with 3/8" washers and 3/8" nuts w/pin. Refer to the Panel Assembly Details. **NOTE:** For ease of installation, insert the 3 interior bolts first, followed by the 3 outer bolts and then the interior bolts.
- 3) Attach mount plates to Cozy Dome panels, using 1 3/8" spacer tubes and 3/8" x 2" head cap screws. Refer to the Surface Mount Detail.
- 4) With Cozy Dome in position, mark anchor bolt locations on the concrete slab (through holes in mount plates). Move Cozy Dome aside. Drill 3/8" x 3" deep holes, using a hammer drill and 3/8" masonry bit.
- 5) Reposition Cozy Dome. Tap 3/8" x 2 3/4" expansion anchors into drilled holes. Fasten mount plates to 3/8" x 2 3/4" expansion anchors, using 3/8" standard hex nuts with 3/8" washers. Refer to the Surface Mount Detail.
- 6) Install protective surfacing before users are allowed to play on the structure.

**DETAIL
PLAN VIEW/FOOTING LAYOUT**

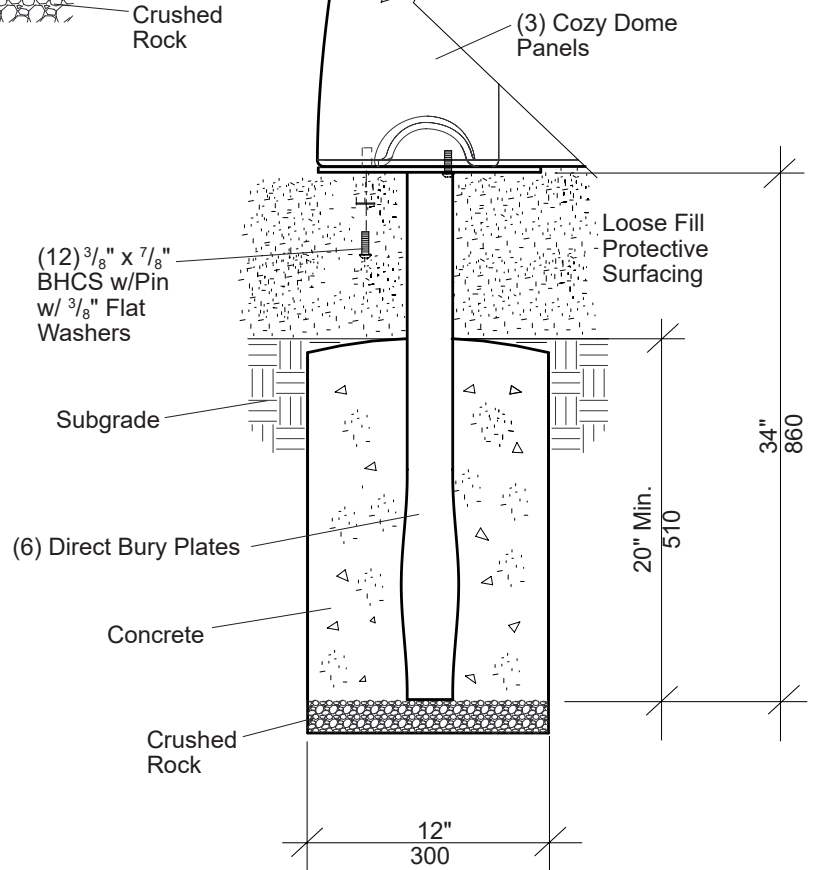
**DETAIL
SURFACE MOUNT**

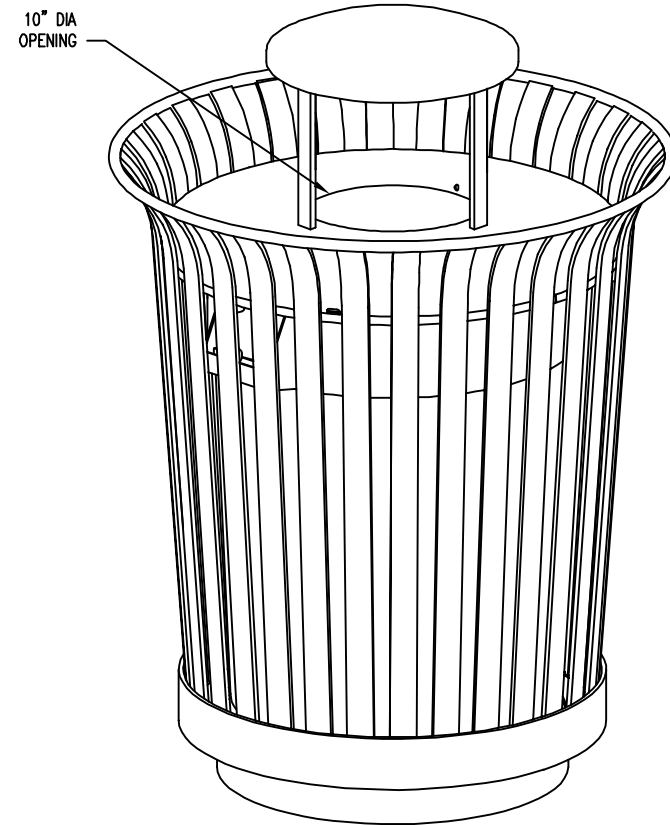
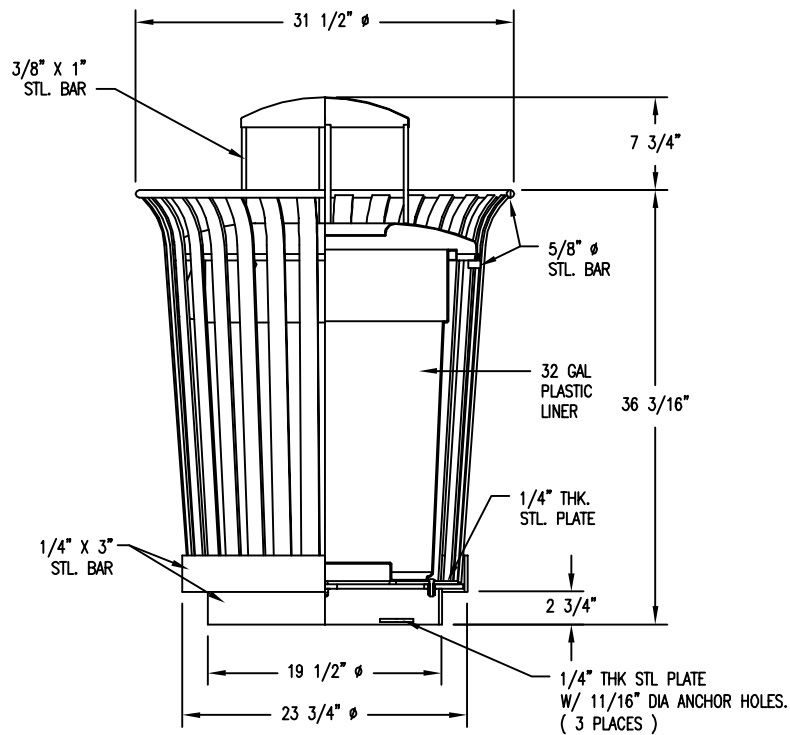
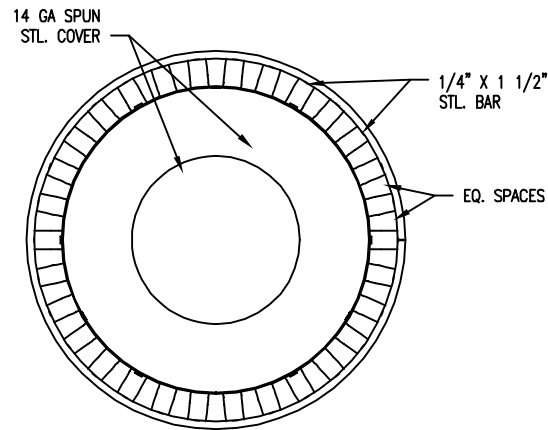


Typical
Concrete
Footing



**DETAIL
DIRECT BURY**





NOTES:

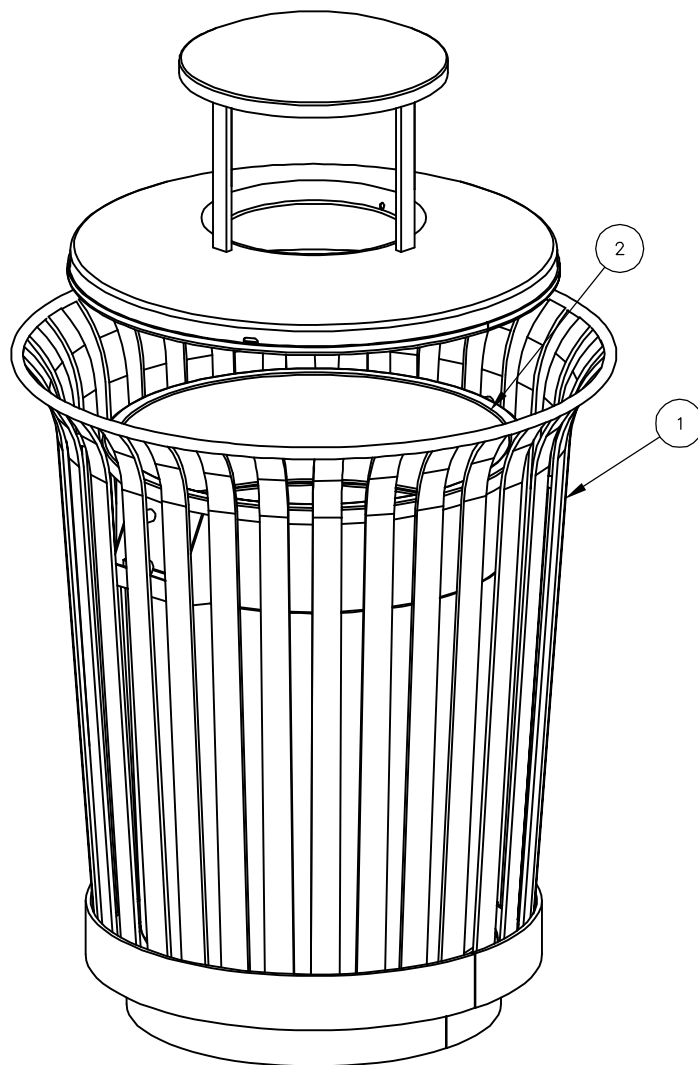
- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.

NOTES:

- 1.) DURING ASSEMBLY PROCEDURE;
DO NOT COMPLETELY TIGHTEN HARDWARE.
- 2.) THE ACTUAL PARTS WILL NOT BE NUMBERED.
NUMBERS ONLY APPLY TO DRAWING.
- 3.) UPON COMPLETION OF ASSEMBLY SQUARE
ALL COMPONENTS THEN TIGHTEN ALL HARDWARE.
- 4.) MOUNT AND ANCHOR AS SPECIFIED.

TOOLS REQ'D

3/4" WRENCH
PLIERS (FOR ATTACHING COVER)
1/2" MASONRY DRILL BIT
DRILL



PARTS LIST

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-84-30	30 GAL STL RECEPT ASSEMBLY
2	1	49-32	32 GAL PL LINER W/ HANDLE, BLK

KITS REQUIRED

ITEM	QTY	PART NO	DESCRIPTION
3	1	K-ANC0860-3	1/2" X 3 3/4" SS ANCHOR KIT (3PCS)



ASSEMBLY INSTRUCTIONS

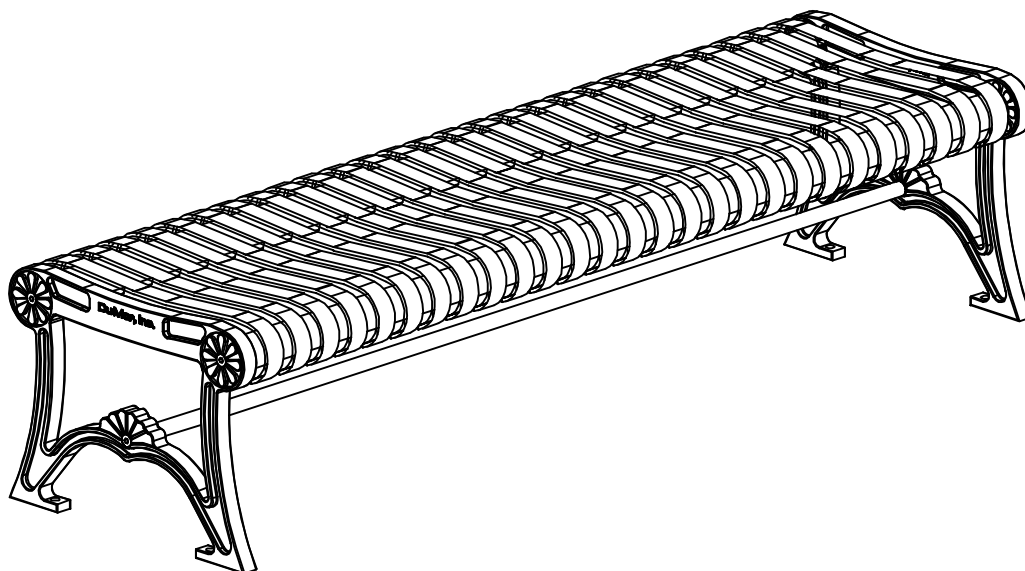
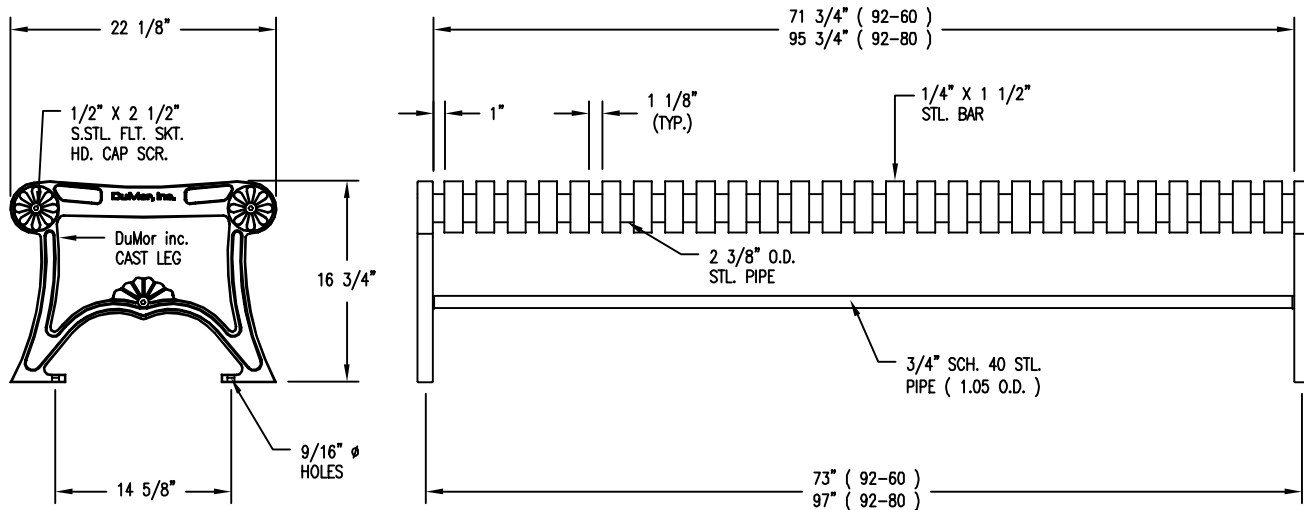
DATE DRAWN : 11/12/13
DRAWN BY : ESS
DATE REV. : 00/00/00
REV. BY : XXX

REV.
A

DRAWING
NUMBER

84-32
W/ CVR-30-BT

SHEET
2 OF 2



NOTES:

- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED

LENGTH OPTIONS

- ☐ 6' BENCH
- ☐ 8' BENCH



BENCH

DATE DRAWN : 3/22/94
 DRAWN BY : AH
 DATE REV. : 12/14/99
 REV. BY : JSB

REV.
 C

DRAWING
 NUMBER

92 SERIES

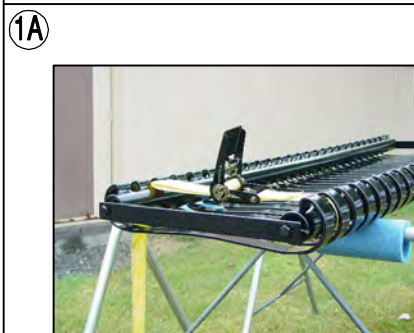
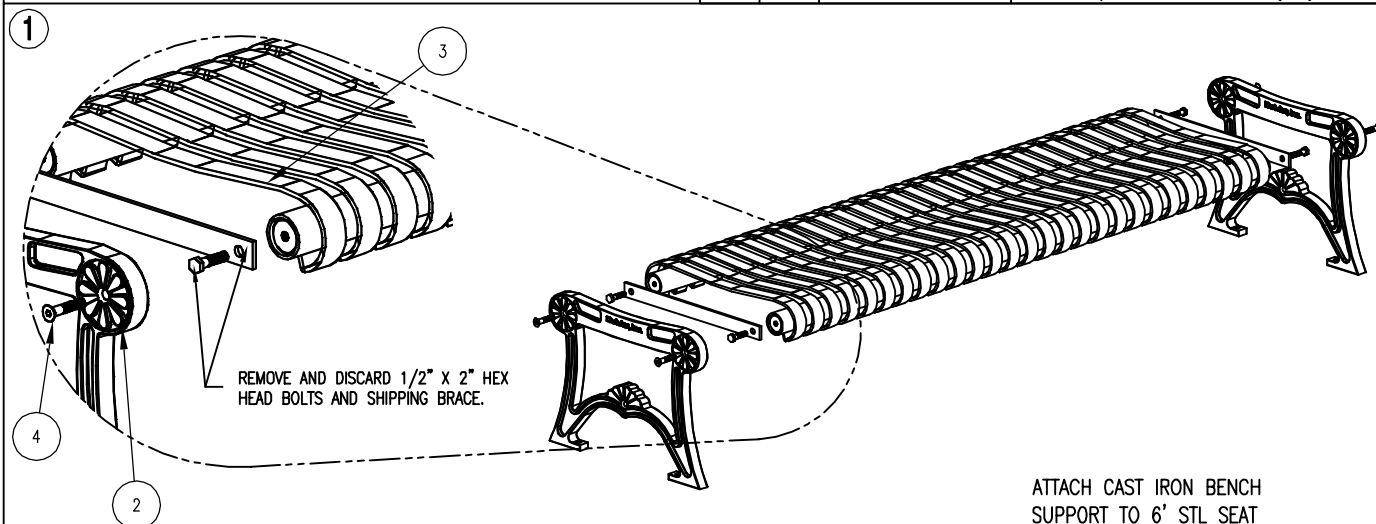
SHEET
 1 OF 2

- 1.) DURING ASSEMBLY PROCEDURE;
DO NOT COMPLETELY TIGHTEN HARDWARE.
- 2.) THE ACTUAL PARTS WILL NOT BE NUMBERED.
NUMBERS ONLY APPLY TO DRAWING.
- 3.) UPON COMPLETION OF ASSEMBLY SQUARE
ALL COMPONENTS THEN TIGHTEN ALL HARDWARE.
- 4.) MOUNT AND ANCHOR AS SPECIFIED.

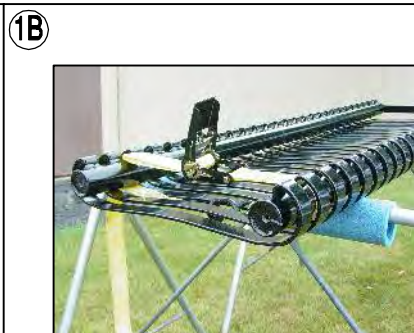
3/4" WRENCH
5/16" ALLEN WRENCH
1/2" MASONRY DRILL BIT
DRILL
RATCHET STRAP (PROVIDED)

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-57-60-04	71 3/4" PIPE BRACE
2	2	0-91-00-02	BKLESS CAST IRON BNCH SUPT
3	1	0-92-60-01	6' STL SEAT
4	6	1-12-065	1/2" X 2 1/2" FLT SKT HD CAP SCR

ITEM	QTY	PART NO	DESCRIPTION
5	1	K-ANCO860-4	1/2" X 3 3/4" SS ANCHOR KIT (4PC)
6	1	K-FCO840-6	1/2" CAP HARDWARE KIT (6PC)



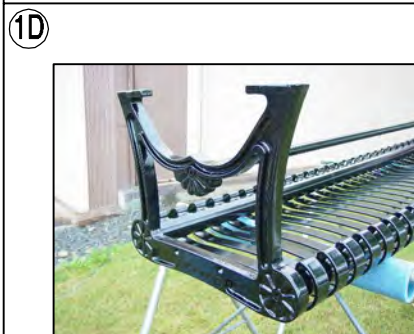
PLACE SEAT ASSEMBLY ON WORK SURFACE ALLOWING ACCESS TO ENDS. PLACE RATCHET STRAP AROUND SEAT ASSEMBLY AS SHOWN ABOVE.



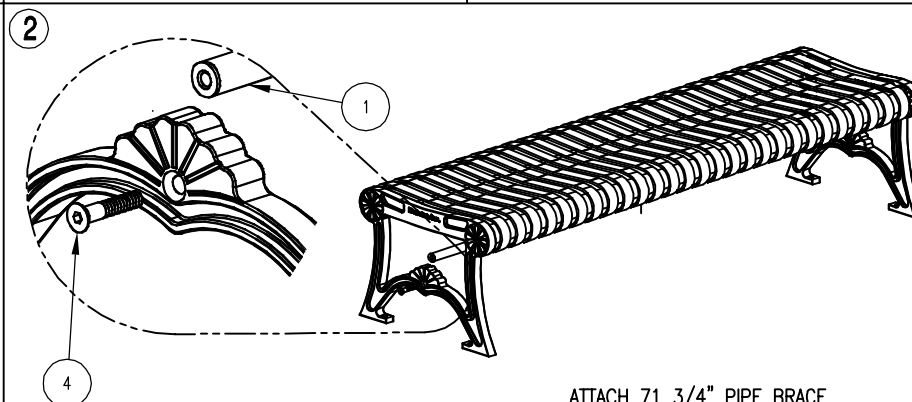
TIGHTEN STRAP UNTIL SHIPPING BRACKET BECOMES LOOSE. THEN REMOVE AND DISCARD BOLTS & SHIPPING BRACKET.



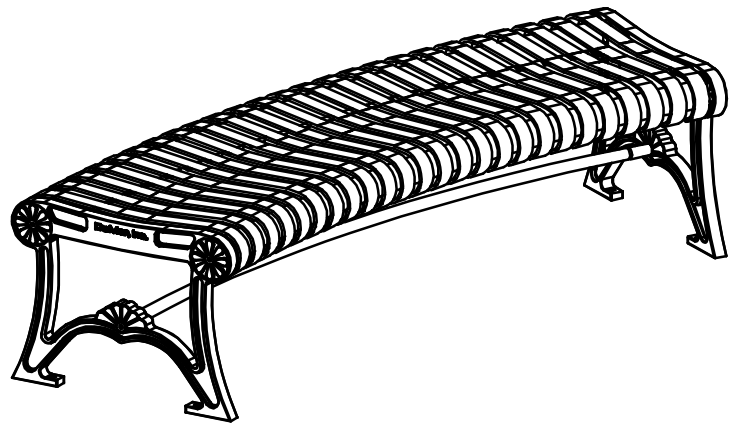
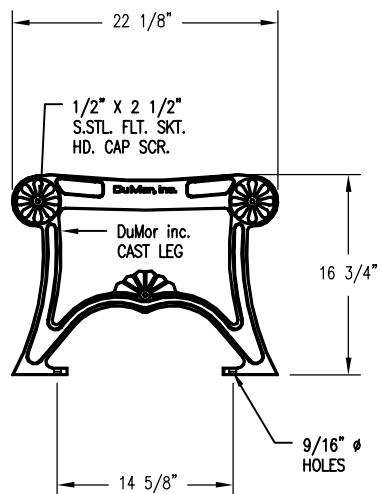
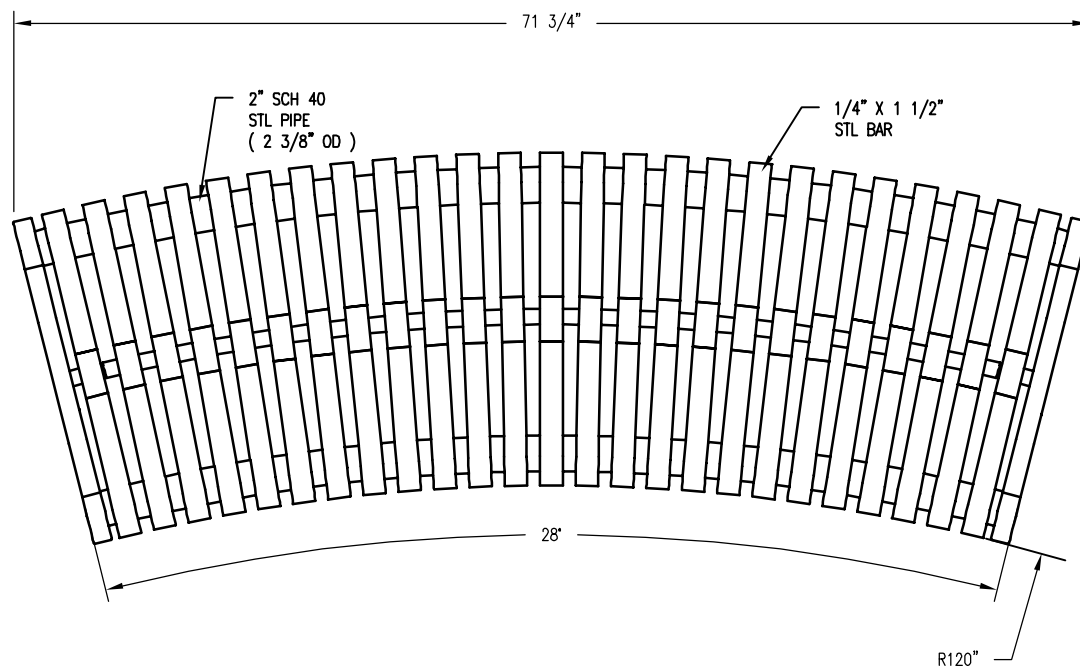
ATTACH CAST SUPPORT TO SEAT ASSEMBLY.
IF HOLES IN CASTING DO NOT ALIGN WITH
THE SEAT ASSEMBLY, ADJUST BY USING
THE RATCHET STRAP.



TIGHTEN HARDWARE THEN REMOVE
RATCHET STRAP AND REPEAT THIS PROCEDURE
ON THE OTHER END OF BENCH.



ATTACH 71 3/4" PIPE BRACE
TO STEP 1 ASSEMBLY



NOTES:

- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) BENCH IS SHIPPED UNASSEMBLED.
- 3.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.



BENCH

DATE DRAWN : 8/26/14
DRAWN BY : JSB
DATE REV. : 00/00/00
REV. BY : XXX

REV.
A

DRAWING
NUMBER

R92-120-6

SHEET
1 OF 2

NOTES:

- 1.) DURING ASSEMBLY PROCEDURE;
DO NOT COMPLETELY TIGHTEN HARDWARE.
- 2.) THE ACTUAL PARTS WILL NOT BE NUMBERED.
NUMBERS ONLY APPLY TO DRAWING.
- 3.) UPON COMPLETION OF ASSEMBLY SQUARE
ALL COMPONENTS THEN TIGHTEN ALL HARDWARE.
- 4.) MOUNT AND ANCHOR AS SPECIFIED.

TOOLS REQ'D

3/4" WRENCH
5/16" ALLEN WRENCH
1/2" MASONRY DRILL BIT
DRILL
RATCHET STRAP (PROVIDED)

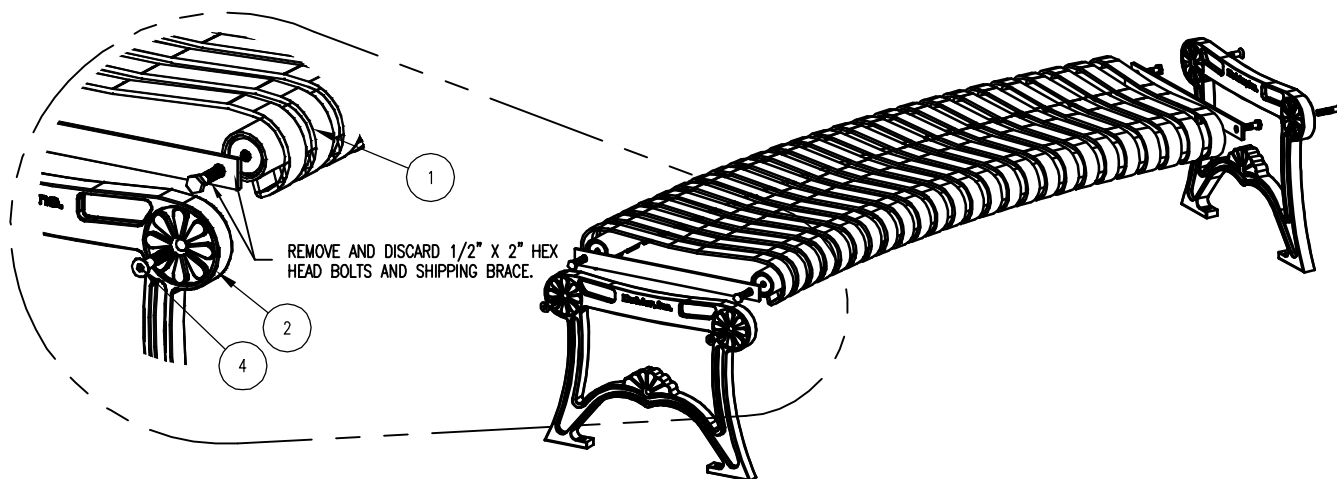
PARTS LIST

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-R92-120-6-1	120" RAD 6' STL BKLS SEAT
2	2	0-91-00-02	BKLESS CAST IRON BNCH SUPT
3	1	0-R92-120-6-2	120" RAD 6' PIPE BRACE
4	6	1-12-065	1/2" X 2 1/2" FLT SKT HD CAP SCR

KITS PROVIDED

ITEM	QTY	PART NO	DESCRIPTION
5	1	K-ANC0860-4	1/2" X 3 3/4" SS ANCHOR KIT (4PC)
6	1	K-FC0840-6	1/2" CAP HARDWARE KIT (6PC)

- 1 ATTACH CAST IRON BENCH
SUPPORT TO STL. SEAT



1A



PLACE SEAT ASSEMBLY ON WORK
SURFACE ALLOWING ACCESS TO ENDS.
PLACE RATCHET STRAP AROUND SEAT
ASSEMBLY AS SHOWN ABOVE.

1B



TIGHTEN STRAP UNTIL SHIPPING BRACKET
BECOMES LOOSE. THEN REMOVE AND DISCARD
BOLTS & SHIPPING BRACKET.

1C



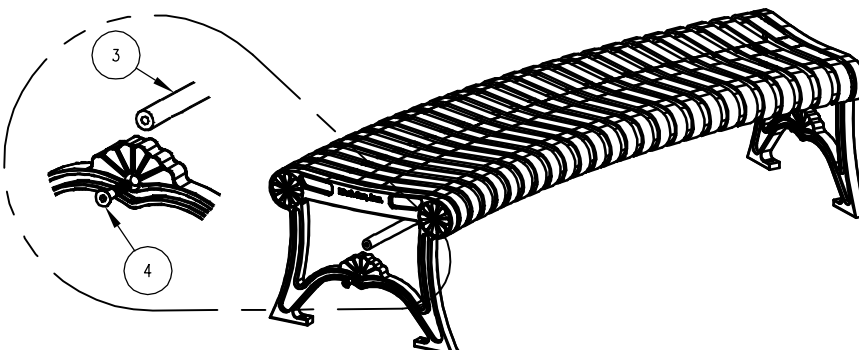
ATTACH CAST SUPPORT TO SEAT ASSEMBLY.
IF HOLES IN CASTING DO NOT ALIGN WITH
THE SEAT ASSEMBLY, ADJUST BY USING
THE RATCHET STRAP.

1D



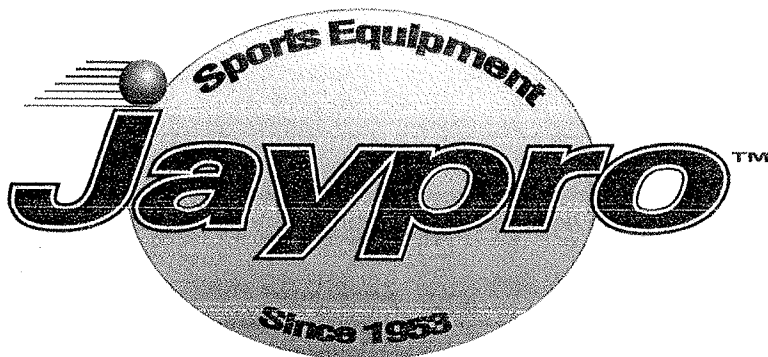
TIGHTEN HARDWARE THEN REMOVE
RATCHET STRAP AND REPEAT THIS PROCEDURE
ON THE OTHER END OF BENCH.

- 2 ATTACH PIPE BRACE
TO STEP 1.



FIXED HEIGHT BASKETBALL SYSTEM

ASSEMBLING INSTRUCTIONS AND OWNER'S MANUAL



Item Number: LS-44



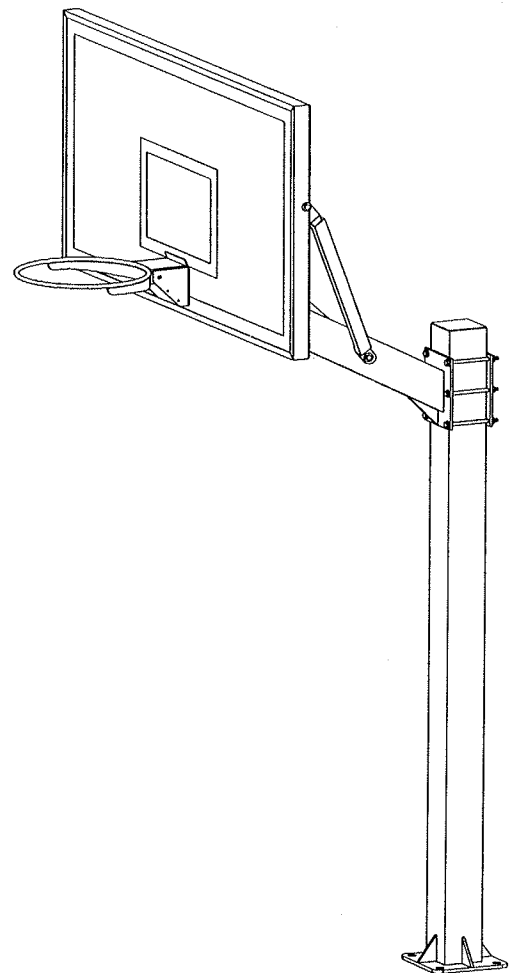
WARNING



FAILURE TO COMPLY WITH
ANY OF THE WARNINGS IN
THESE INSTRUCTIONS MAY
RESULT IN SERIOUS
PERSONAL INJURY.

FAILURE TO COMPLY MAY ALSO RESULT
IN PROPERTY DAMAGE. PLEASE HEED
ALL WARNINGS AND CAUTIONS TO
ENSURE YOUR SAFETY.

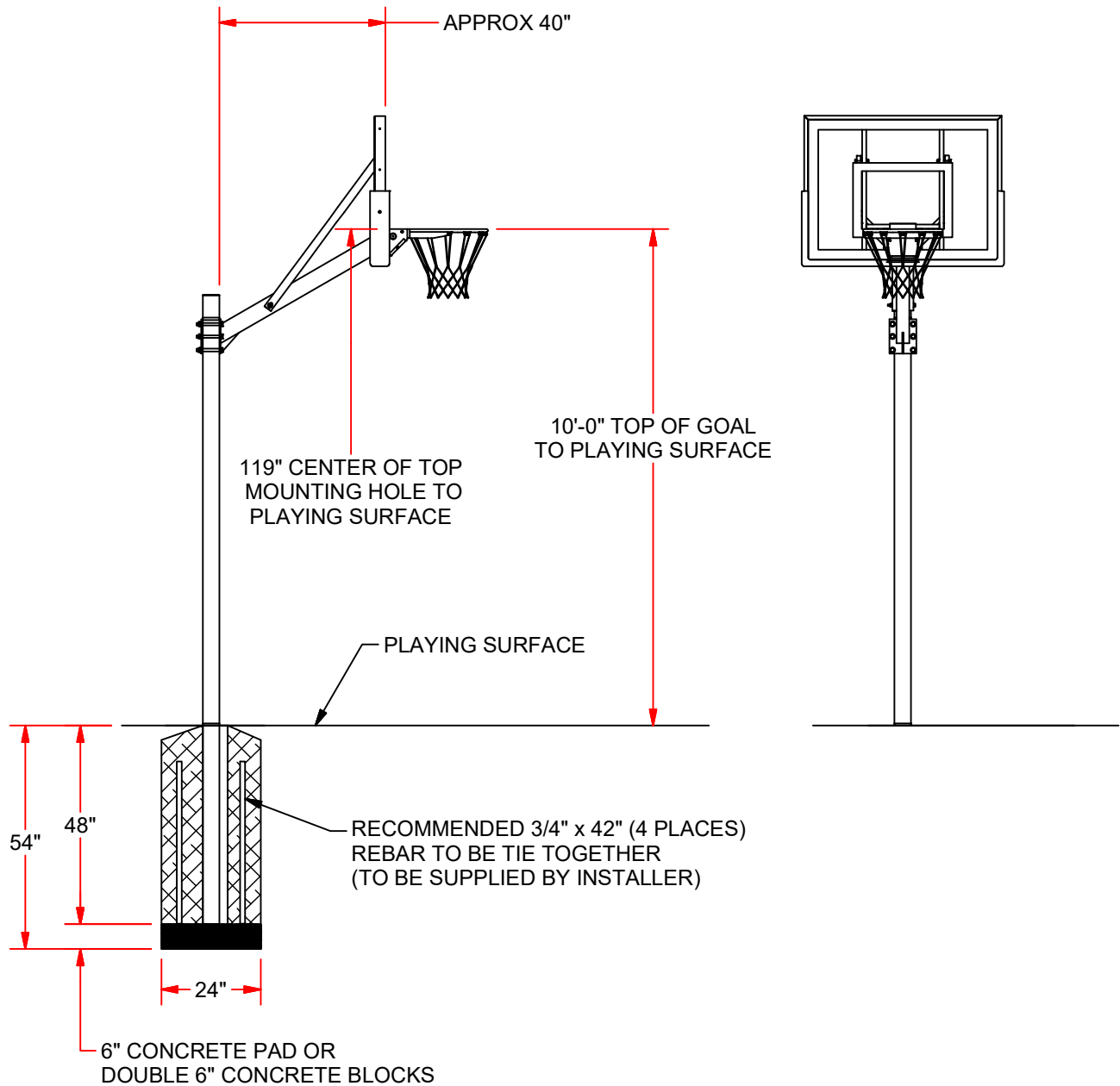
DO NOT ATTEMPT TO ASSEMBLE THIS
SYSTEM WITHOUT CAREFULLY READING
AND FOLLOWING ALL INSTRUCTIONS.
BEGIN BY IDENTIFYING AND TAKING
INVENTORY OF ALL PARTS USING
THE PARTS LIST PROVIDED.



Keep this instruction manual in case you have to contact the manufacturer for replacement parts.

400-AC-FG / 400-FA-FG

(LS-44)



***NOTE: FAN BACKBOARD DOES NOT REQUIRE BRACES.**

SUPPLEMENTAL INSTRUCTIONS

TOOLS AND MATERIALS REQUIRED FOR ASSEMBLY
(Not Included)

- | | |
|--------------------------|--------------------------------|
| 1. 2 Adjustable Wrenches | 10. Concrete-1/2 yard or 14-16 |
| 2. Socket Set | Bags, (80 lb. bags) |
| 3. 9/16" Wrench | 11. Phillips Head Screwdriver |
| 4. 3/4" Wrench | 12. Electric Drill |
| 5. 15/16" Wrench | 13. Carpenter's Level |
| 6. 1/2" Wrench | 14. A minimum of 2 Ladders |
| 7. Hammer or Mallet | 15. Water Supply |
| 8. Tape Measure | 16. Degreaser |
| 9. Shovel | 17. 1/4" Drill Bit |

**** A MINIMUM OF SIX ADULTS IS
REQUIRED TO LIFT UNIT INTO PLACE****



BEFORE YOU START



- A. Identify and inventory all parts using the checklist boxes in the parts list. Be sure to keep the hardware bags and their contents separate. If any parts are missing call our Customer Service Department.
- B. Test fit all Bolts by inserting them into the respective hole. If necessary, carefully scrape away any excess powder coating buildup from inside the holes. Do not scrape away all of the powder coating. Bare metal may rust.



SAFETY INSTRUCTIONS



FAILURE TO FOLLOW THESE SAFETY INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE AND WILL VOID THE WARRANTY. The owner must ensure that all players know and follow these rules to safely operate the system. Proper and complete assembly, use and supervision is essential for proper operation and to reduce the risk of accident or injury. A high probability of serious injury exists if this system is not installed, maintained, or operated properly.

- If using a ladder during assembly, use extreme caution. Follow all warnings and cautions on the ladder carefully.
- 6 people are required to lift the unit into place.
- Before digging, contact the appropriate agency to locate underground power cables, gas, and water lines. Do not install the system within 20 feet of overhead power lines.
- Climate, corrosion, or misuse could result in system failure.
- If technical assistance is required, contact the manufacturer.
- Minimum operational height is 7' 6" to the Rim. Most injuries are caused by misuse and/or failure to follow instructions. Use caution when using the system.

Required For This Page:
15/16" Wrench

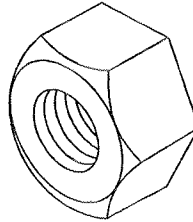


Shovel

Tape Measure

BH0001

TC
(8PCS)



****ONLY ONE ADULT IS REQUIRED FOR THE FOLLOWING STEPS****

STEP A

NOTE: Before digging, call to locate any buried utility lines.

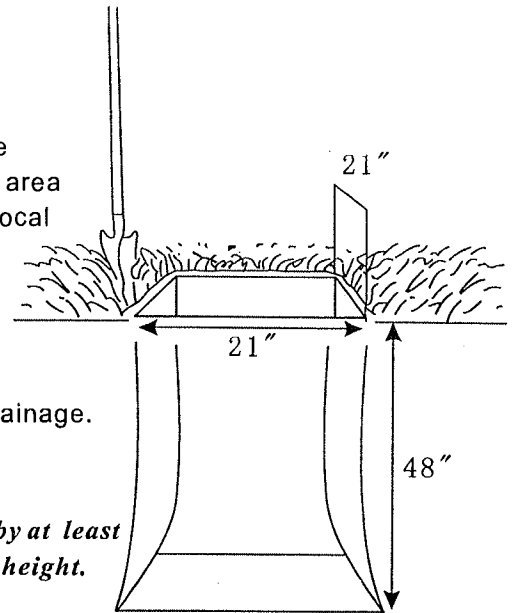
- a. Dig a hole 48" deep and 21"x21" square. The edge of the hole should be flush with the edge of the playing surface. If you live in an area where heavy frost can occur, it may pose a problem, consult your local building inspector to determine the appropriate hole depth.

NOTE: The hole must be at least 48" deep.

- b. Build a form before pouring the concrete pad, to ensure that the top of the concrete remains straight and square. The form should be placed about 1/2" above the playing surface to allow for water drainage.
- c. Bell out the bottom of the hole.

NOTE: A square hole prevents the rotation of the concrete.

NOTE: The area behind the playing surface must be cleared off by at least 3 feet to enable the user to stand behind the pole to adjust the Rim height.

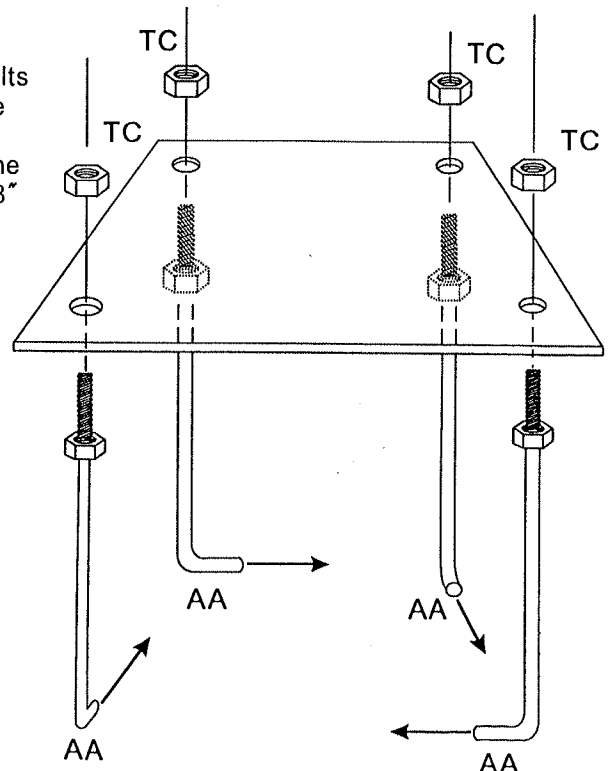
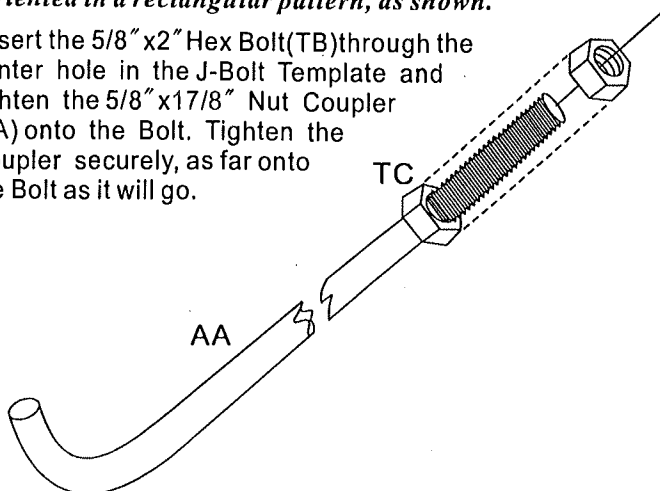


STEP B

- A. Thread a 5/8" Hex Nut (TC) onto each of the 5/8"x16" J-Bolts (AA). Securely tighten the Nuts all the way down to the end of the threads.
- B. Slide the threaded ends of the J-Bolts through the holes in the corners of the J-Bolt Template (AB) and secure them with 5/8" Hex Nuts (TC) as shown. Securely tighten all Nuts at this time.

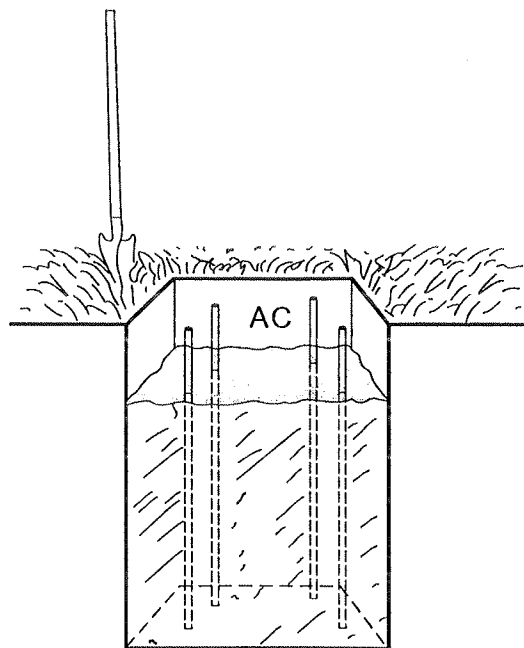
NOTE: Make sure the curved "J" ends of the J-Bolts are oriented in a rectangular pattern, as shown.

- C. Insert the 5/8"x2" Hex Bolt (TB) through the center hole in the J-Bolt Template and tighten the 5/8"x17/8" Nut Coupler (TA) onto the Bolt. Tighten the Coupler securely, as far onto the Bolt as it will go.



STEP C

- a. Mix the concrete according to the instructions on the bag. Note that a thicker mix of concrete will dry stronger than a thin mix. Pour the concrete into the hole, up to approximately 18 inches from the top edge.
- b. Insert the four pieces of 36" Rebar (AC) into the hole, pushing each piece firmly to the bottom of the hole. The four pieces should be arranged in a square approximately 8 inches wide so that each piece of rebar will be positioned next to the J-Bolts when the J-Bolt Template is placed in the cement.
- c. Finish filling the hole to the top with concrete. The top of the concrete should reach just above the level of the top of the form.



STEP D

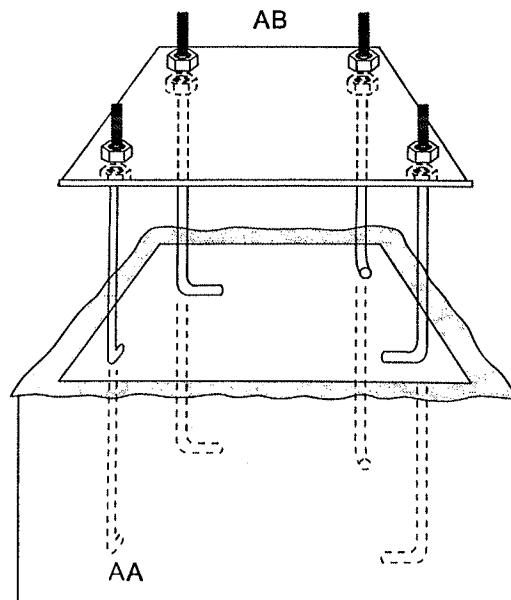
- A. Position the J-Bolt Template (AB) over the hole so that it is centered, with the sides of the plate square with the sides of the hole.

NOTE: The front of the Template is the side that the Nut coupler (TA) is on. This must be the side closest to the playing surface.

- B. Push the J-Bolts (AA) into the concrete until the J-Bolt Template is resting flat against the surface of the concrete.
- C. Lift the Template slightly above the concrete by holding the top of the J-Bolts and wiggle the Template assembly back and forth repeatedly to eliminate any air bubbles in the concrete. Make sure the Template is resting on the concrete after you are done. Slope the concrete pad away from the Pole to allow for water to drain away.

NOTE: The lower four 5/8" Hex Nuts and the Nut Coupler will be in the concrete permanently.

- D. Clean off any concrete that may be on the J-Bolt Template or the exposed portions of the J-Bolts.
- E. Using a carpenter's level, make sure the Template is square to and level with the playing surface.
- F. Allow the concrete to cure for a minimum of 72 hours before installing the rest of your basketball system. Allow additional time for the concrete to cure in cold, wet or humid weather conditions.



YOU ARE NOW FINISHED WITH THE INITIAL ASSEMBLY STEPS. DO NOT PROCEED WITH THE REST OF THE ASSEMBLY UNTIL THE CONCRETE HAS FULLY CURED. THIS TAKES A MINIMUM OF 72 HOURS. AS PREVIOUSLY STATED, DEPENDING ON WEATHER CONDITIONS, IT MAY TAKE ADDITIONAL TIME FOR THE CONCRETE TO CURE.



WARNING



NEVER USE THE SYSTEM WITHOUT CAREFULLY FOLLOWING THE CEMENTING INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS AND WARNINGS COULD LEAD TO SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE AS LISTED ON PAGE ONE.

Required For This Page:

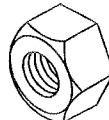
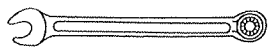
EC
(6PCS)

EB
(12PCS)

ED
(6PCS)

EA
(6 PCS)

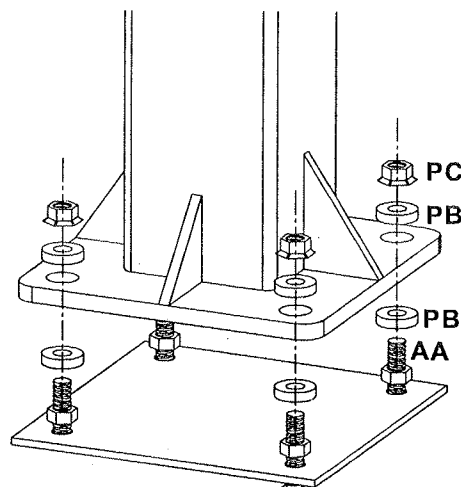
5/8" Wrenches



STEP 1

WARNING: At least two adults must hold the Pole steady while securing it to the Base.

- Slide a Flat Washer (PB) over each of the J-Bolts(AA).
- Position the pole on the template.
- Slide another Flat Washer (PB) over each of the J-Bolts(AA).
Thread a Flange Nut(PC) to each J-bolt. Tighten the Nuts only a few turns onto the J-Bolts. Do not tighten the Nuts all the way down to the Plate at this time.

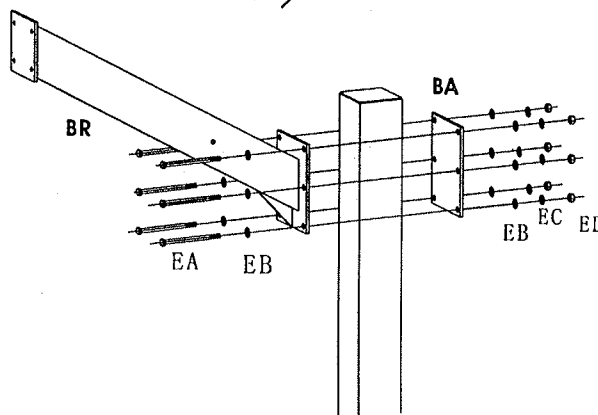


STEP 2

- Slide the plate(BA) to the white line on the back side of Pole, the top of the plate (BA) cover the white line as shown in FIGURE 5.
- Position the Brace (BR) to the front side of pole, slide a bolt(EA) through a flat washer(EB), a hole on brace, another flat washer(EB), a lock washer (EC), secure the bolt with a Hex Nut(ED).
- Secure the other bolts(EA) by repeating the above step. Make sure the Brace (BR) are tight on the pole.
Note: 2 persons are required for this step. One holds the Brace steady while other securing the Bolt.

White line

FIGURE 5

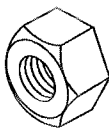


Required For This Page:

3/8" Wrenches



RE
(4PCS)



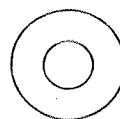
RD
(4PCS)



RC
(4PCS)



RB
(8PCS)



RA
(4PCS)



STEP 3

- Line up the Rim (RM) to the Backboard, put a Rubber Spacer (RS) between the backboard and rim as shown in FIGURE 3A.
- Slide a Hex Head Bolt (RA) through a Flat Washer (RB), the hole on Rim and backboard, secure the Hex Head Bolt (RA) with a thin Hex Nut (RC).
- Secure the other bolts(RA) by repeating the above step as shown in FIGURE 3B.

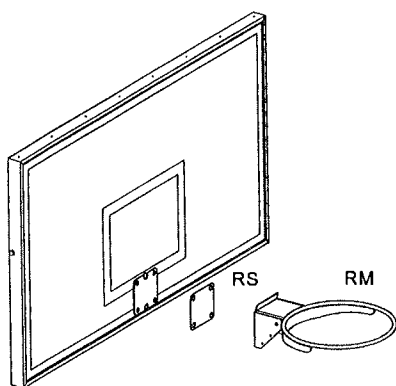


FIGURE 3A

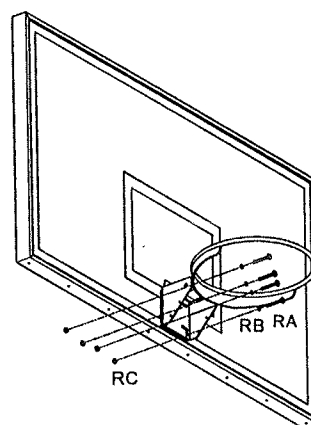
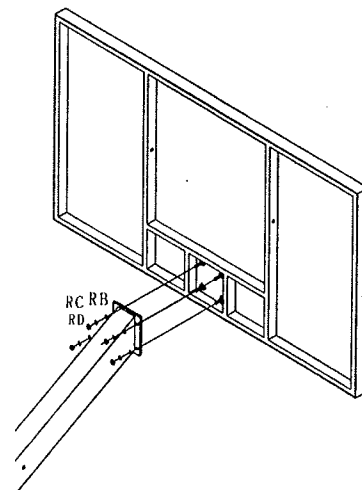


FIGURE 3B

STEP 4

- Position the Backboard and Rim to the front side of brace, slide the 4 Hex Head Bolts through the 4 holes on Brace, slide a flat washer(RB), a lock washer(RC) to each bolt, secure the bolt with a Hex Nut(RD).
- Secure the other bolts(RA) by repeating the above step. Make sure the Backboard and Rim are tight on the Brace.

Note: Three persons are required for this step. Two hold the Backboard and Rim steady while other securing the Bolt.



Required For This Page:

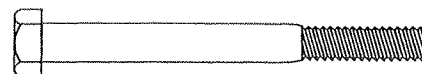
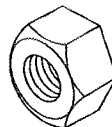
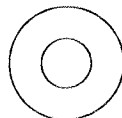
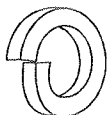
EC
(6PCS)

EB
(12PCS)

ED
(6PCS)

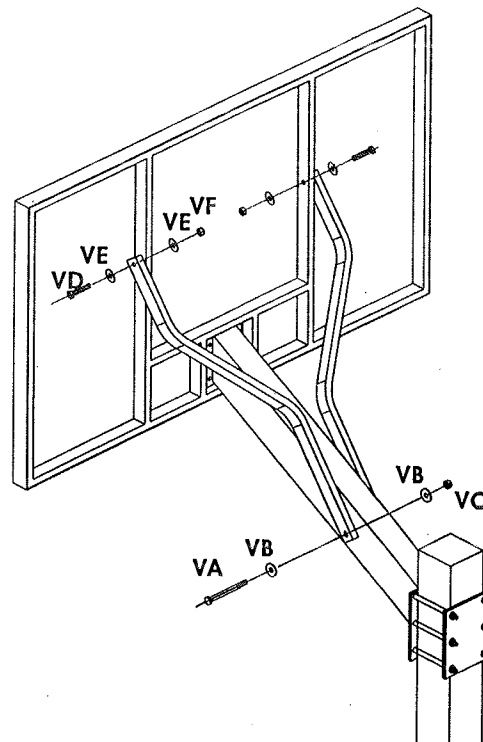
EA
(6 PCS)

5/8" Wrenches

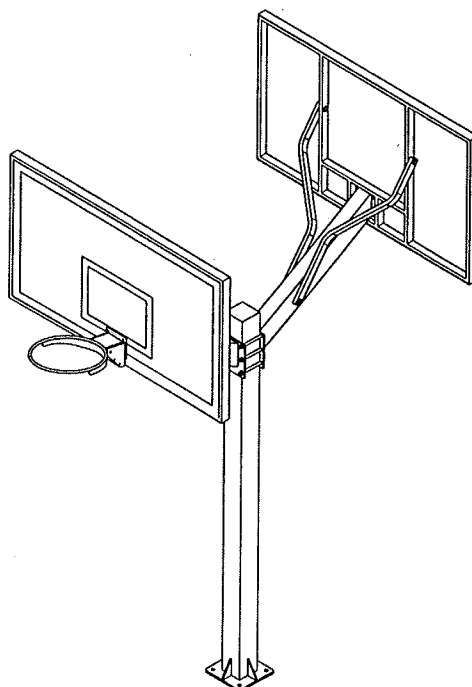


STEP 5

- Slide the 2 Upper arms to the hole on the brace.
- Slide a Hex bolt(VA) through a Flat Washer(VB), the hole on Brace, another Flat Washer(VB), secure the bolt with a Lock nut(VC).
- Slide the end of Arms to the holes on backboard, slide the Hex Head Bolt (VD) through a Flat Washer(VE), the hole on backboard, another Flat Washer(VE), secure the Hex Bolt(VD) with a Lock Nut(VF).
- Secure the other arm to backboard by repeating the above step.



STEP 6



two backboards can be assembled on a pole as shown.

APPENDIX B

SOIL TEST REPORTS

Soil Test Report

Prepared For:

David Warner
Warner Larson, Inc.
130 W Broadway
Boston, MA 02127

dwarner@warnerlarson.com

781-771-5116

Sample Information:

Sample ID: A-topsoil

Order Number: 73858

Lab Number: S240425-208

Area Sampled: 2000 sq ft

Received: 4/25/2024

Reported: 5/3/2024

Results

Analysis	Value Found	Optimum Range	Analysis	Value Found	Optimum Range
Soil pH (1:1, H ₂ O)	6.9		Cation Exch. Capacity, meq/100g	6.4	
Modified Morgan extractable, ppm			Exch. Acidity, meq/100g	2.9	
Macronutrients			Base Saturation, %		
Phosphorus (P)	4.4	4-14	Calcium Base Saturation	50	50-80
Potassium (K)	38	100-160	Magnesium Base Saturation	3	10-30
Calcium (Ca)	643	1000-1500	Potassium Base Saturation	2	2.0-7.0
Magnesium (Mg)	23	50-120	Scoop Density, g/cc	1.25	
Sulfur (S)	6.9	>10	Optional tests		
Micronutrients *			Soil Organic Matter (LOI), %	3.2	
Boron (B)	0.1	0.1-0.5	Soluble Salts (1:2), dS/m	0.71	<0.6
Manganese (Mn)	5.3	1.1-6.3	Nitrate-N (NO ₃ -N), ppm	10	
Zinc (Zn)	3.7	1.0-7.6			
Copper (Cu)	0.3	0.3-0.6			
Iron (Fe)	4.0	2.7-9.4			
Aluminum (Al)	34	<75			
Lead (Pb)	7.0	<22			

* Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

Recommendations for New Lawn Construction

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
0	2 - 4	1	3
lbs / 1000 sq ft			

Comments:

- For instructions on converting nutrient recommendations to fertilizer applications in lawns, see Reference "Step-by-Step Fertilizer Guide for Lawns" (listed below).
- For best results, split the N, P2O5, and K2O recommendations above into three to four applications over the course of the growing season at six to eight week intervals, beginning in mid- to late-April.
- Many fertilizer sources and rates may be combined to provide acceptable turfgrass fertility.
- The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

References:

Home Lawn and Garden Information

<http://ag.umass.edu/resources/home-lawn-garden>

Step-by-Step Fertilizer Guide for Lawns

<http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/fertilizer-guide-for-lawns>

General References:

Interpreting Your Soil Test Results

<http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results>

Soil Lead: Testing, Interpretation & Recommendations

<http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet>

For current information and order forms, please visit

<http://soiltest.umass.edu/>

UMass Extension Nutrient Management

<http://ag.umass.edu/agriculture-resources/nutrient-management>

Particle Size Analysis - Comprehensive

Prepared For:

David Warner
Warner Larson, Inc.
130 W Broadway
Boston, MA 02127

dwarner@warnerlarson.com
781-771-5116

Sample Information:

Sample ID: A-Topsoil

Order Number: 73995

Lab Number: X240430-105

Received: 4/25/2024

Reported: 5/9/2024

<u>USDA Size Fraction</u>			<u>Percent of Whole Sample Passing</u>		
<u>Main Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>	<u>Size (mm)</u>	<u>Sieve #</u>	<u>Whole Sample % of Sample Passing</u>
Sand	0.05-2.0	73.3	2.00	#10	84.3
Silt	0.002-0.05	18.8	1.00	#18	76.7
Clay	<0.002	7.9	0.50	#35	65.6
			0.25	#60	51.5
			0.10	#140	34.1
			0.053	#270	22.5
<u>Sand Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Very Coarse	1.0-2.0	9.0	0.02	20 um	15.3
Coarse	0.5-1.0	13.2	0.005	5 um	8.9
Medium	0.25-0.5	16.7	0.002	2 um	6.7
Fine	0.10-0.25	20.6			
Very Fine	0.05-0.10	13.8			
<u>Silt Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Coarse	0.02-0.05	8.5			
Medium	0.005-0.02	7.6			
Fine	0.002-0.005	2.6			

USDA Textural Class: sandy loam
Gravel Content: (%) 15.7

Particle Size Analysis - Comprehensive

Prepared For:

David Warner
Warner Larson, Inc.
130 W Broadway
Boston, MA 02127

dwarner@warnerlarson.com
781-771-5116

Sample Information:

Sample ID: B-Gravel

Order Number: 73995

Lab Number: X240430-106

Received: 4/25/2024

Reported: 5/9/2024

USDA Size Fraction			Percent of Whole Sample Passing		
<u>Main Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>	<u>Size (mm)</u>	<u>Sieve #</u>	<u>Whole Sample % of Sample Passing</u>
Sand	0.05-2.0	74.9	2.00	#10	48.5
Silt	0.002-0.05	11.7	1.00	#18	39.3
Clay	<0.002	13.4	0.50	#35	27.6
			0.25	#60	17.5
			0.10	#140	13.7
			0.053	#270	12.2
			0.02	20 um	11.2
			0.005	5 um	7.9
			0.002	2 um	6.5
<u>Sand Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Very Coarse	1.0-2.0	19.1			
Coarse	0.5-1.0	24.0			
Medium	0.25-0.5	20.8			
Fine	0.10-0.25	7.9			
Very Fine	0.05-0.10	3.1			
<u>Silt Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Coarse	0.02-0.05	2.1			
Medium	0.005-0.02	6.8			
Fine	0.002-0.005	2.8			

USDA Textural Class: gravelly coarse sandy loam

Gravel Content: (%) 51.5

Particle Size Analysis - Comprehensive

Prepared For:

David Warner
Warner Larson, Inc.
130 W Broadway
Boston, MA 02127

dwarner@warnerlarson.com
781-771-5116

Sample Information:

Sample ID: C-Subsoil

Order Number: 73995

Lab Number: X240430-107

Received: 4/25/2024

Reported: 5/9/2024

<u>USDA Size Fraction</u>			<u>Percent of Whole Sample Passing</u>		
<u>Main Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>	<u>Size (mm)</u>	<u>Sieve #</u>	<u>Whole Sample % of Sample Passing</u>
Sand	0.05-2.0	69.4	2.00	#10	65.6
Silt	0.002-0.05	19.4	1.00	#18	59.2
Clay	<0.002	11.2	0.50	#35	49.4
			0.25	#60	39.0
			0.10	#140	27.9
			0.053	#270	20.1
<u>Sand Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Very Coarse	1.0-2.0	9.7	0.02	20 um	14.2
Coarse	0.5-1.0	15.0	0.005	5 um	8.5
Medium	0.25-0.5	15.8	0.002	2 um	7.3
Fine	0.10-0.25	16.9			
Very Fine	0.05-0.10	12.0			
<u>Silt Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>			
Coarse	0.02-0.05	8.9			
Medium	0.005-0.02	8.7			
Fine	0.002-0.005	1.8			

USDA Textural Class: gravelly sandy loam
Gravel Content: (%) 34.4

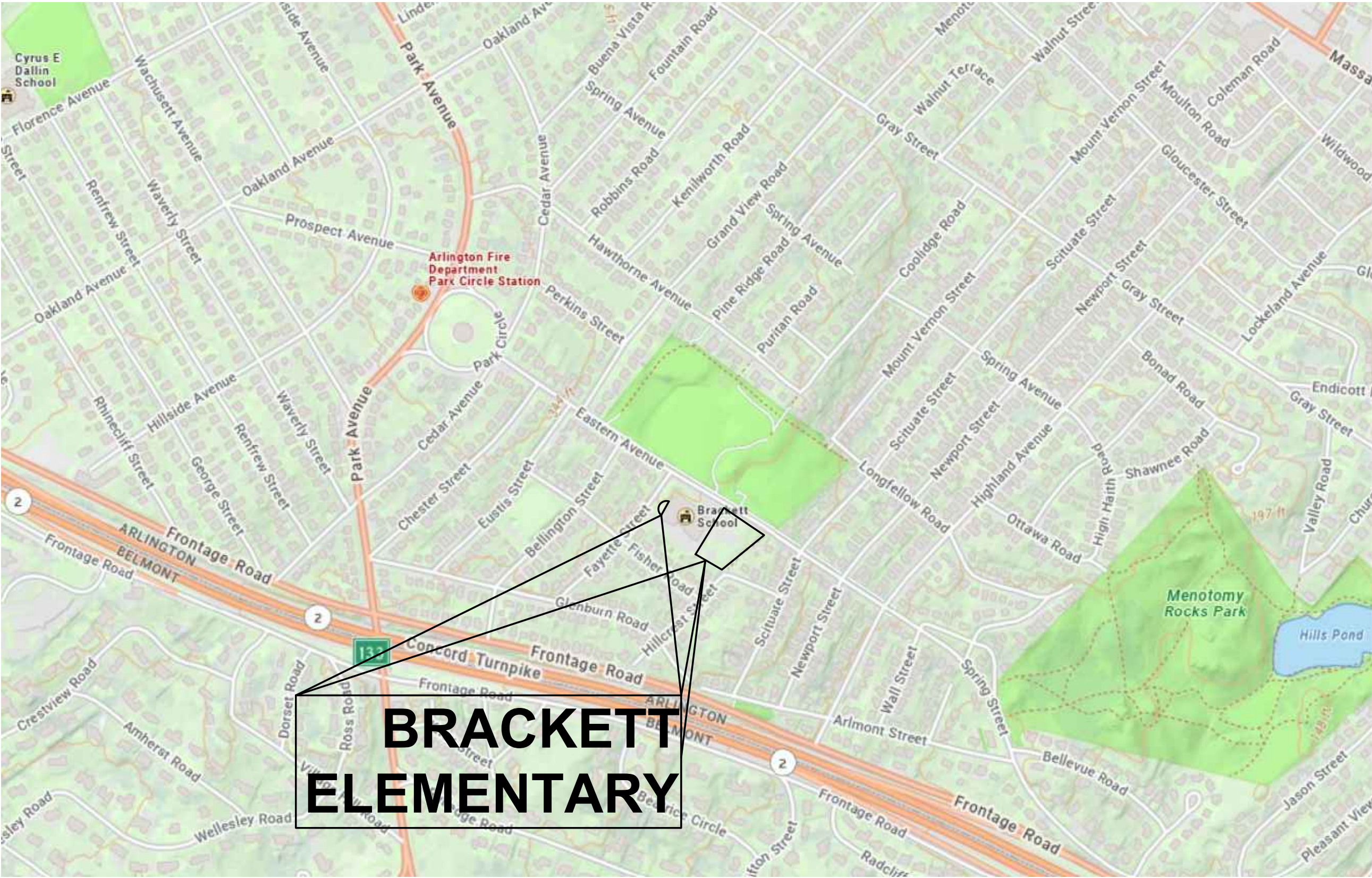
BRACKETT ELEMENTARY SCHOOL PLAYGROUND

66 Eastern Ave, Arlington, MA 02476

Locus Map (not to scale):

Prepared For:
TOWN OF ARLINGTON, MASSACHUSETTS

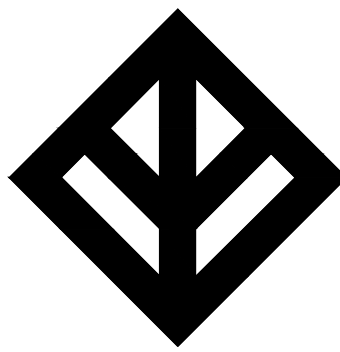
Drawing Index	
#	Title
L000	COVER SHEET
L001	EXISTING CONDITIONS-1
L002	EXISTING CONDITIONS-2
L101	SITE DEMOLITION & PREPARATION PLAN - 1
L102	SITE DEMOLITION & PREPARATION PLAN - 2
L201	LAYOUT AND MATERIALS PLAN - 1
L202	LAYOUT AND MATERIALS PLAN - 2
L301	GRADING AND PLANTING PLAN - 1
L302	GRADING AND PLANTING PLAN - 2
L401	LANDSCAPE DETAILS - 1
L402	LANDSCAPE DETAILS - 2



IFB #24-15

May 22, 2024
BID DOCUMENTS SET

Prepared By:



WARNER LARSON
LANDSCAPE ARCHITECTS

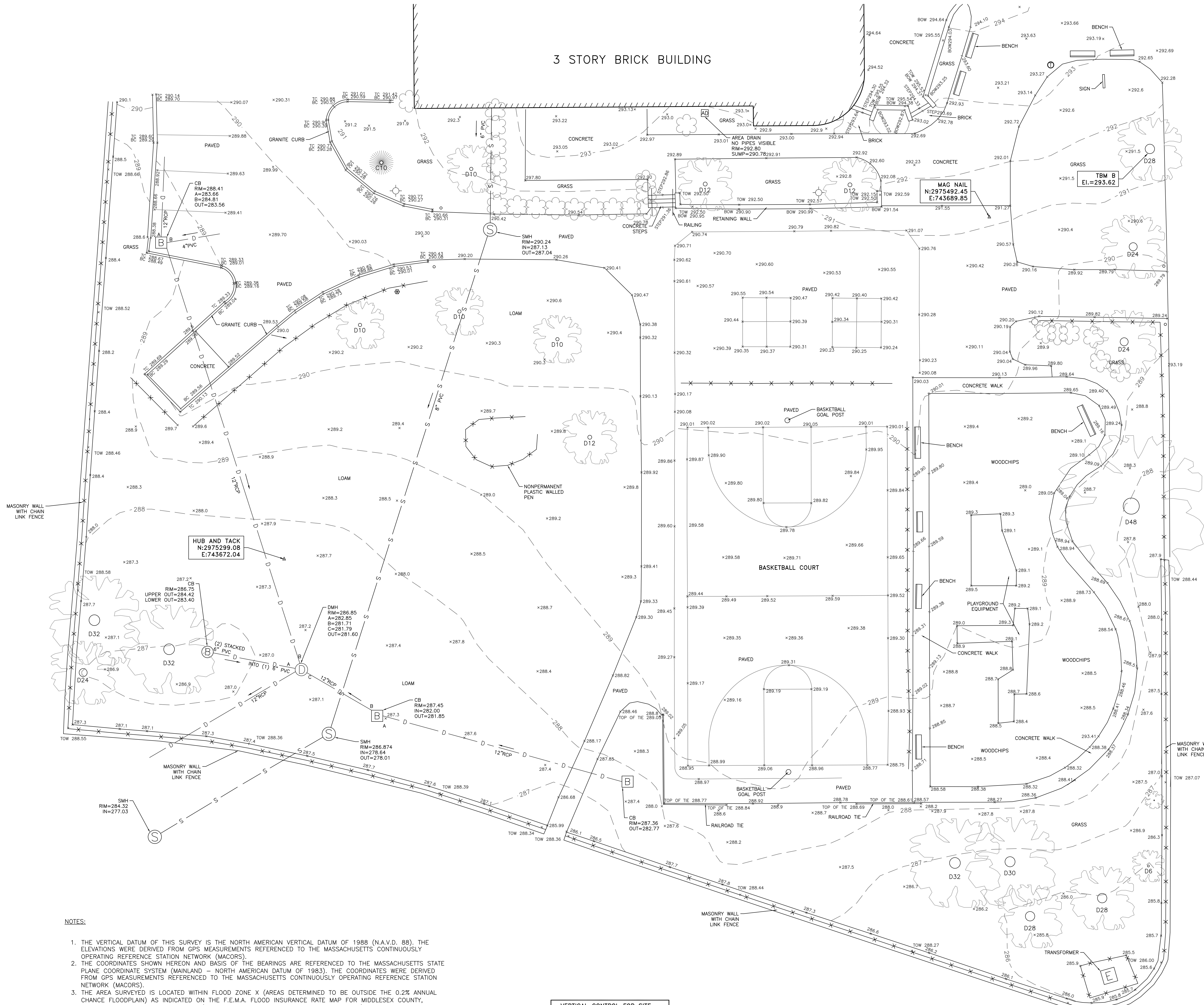
130 WEST BROADWAY, BOSTON MA 02127
617.464.1440 warnerlarson.com

SURVEYOR

Reed Land Surveying
109 RHODE ISLAND ROAD, SUITE 4A
LAKEVILLE, MA 02347
(508)923-1181

ABBREVIATIONS LIST:

ADJ	ADJACENT
BC	BOTTOM OF CURB
CB	CATCH BASIN
CIP	CAST IN PLACE
CLF	CHAIN LINK FENCE
CONC	CONCRETE
CP	CENTER POINT
DET'L	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DWG	DRAWING
EA	EACH
EQ	EQUAL
EX	EXISTING
EXP	EXPANSION
FIN	FINISH
GA	GAUGE
GALV	GALVANIZED
GRAN	GRANITE
HT	HEIGHT
JT	JOINT
LA	LANDSCAPE ARCHTIECT
LOW	LIMIT OF WORK
LP	LIGHT POLE
MATL	MATERIAL
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PC	POINT OF CURVATURE
PIP	POURED IN PLACE
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTD	PAINTED
PVMT	PAVEMENT
REINF	REINFORCED
REQ	REQUIRED
SF	SQUARE FEET
SIM	SIMILAR
STL	STEEL
TC	TOP OF CURB
TYP	TYPICAL
VERT	VERTICAL
VIF	VERIFY IN FIELD



EASTERN AVENUE

LEGEND	
THESE STANDARD SYMBOLS MAY BE FOUND IN THE DRAWING	
	STREET SIGN
	FIRE HYDRANT
	CABLE MANHOLE
	DRAIN MANHOLE
	ELECTRIC MANHOLE
	SEWER MANHOLE
	TELEPHONE MANHOLE
	WATER MANHOLE
	UNKNOWN MANHOLE
	CATCH BASIN
	ELECTRIC BOX/MTR
	CABLE BOX
	TELEPHONE BOX
	GAS METER
	MONITORING WELL
	GAS GATE
	WATER GATE
	ELECTRIC HAND HOLE
	UTILITY POLE
	LIGHT POLE
	GUY WIRE
	YARD LIGHT
	BOUND
	BOUND W/ DRILL HOLE
	POST/BOLLARD
	ROOF DRAIN
	BUSH/SHRUB
	PARKING SPACES
	IRRIGATION

NOTES:

1. THE VERTICAL DATUM OF THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (N.A.V.D. 88). THE ELEVATIONS WERE DERIVED FROM GPS MEASUREMENTS REFERENCED TO THE MASSACHUSETTS CONTINUOUSLY OPERATING REFERENCE STATION NETWORK (MACORS).
2. THE COORDINATES SHOWN HEREON AND BASIS OF THE BEARINGS ARE REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND - NORTH AMERICAN DATUM OF 1983). THE COORDINATES WERE DERIVED FROM GPS MEASUREMENTS REFERENCED TO THE MASSACHUSETTS CONTINUOUSLY OPERATING REFERENCE STATION NETWORK (MACORS).
3. THE AREA SURVEYED IS LOCATED WITHIN FLOOD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS INDICATED ON THE F.E.M.A. FLOOD INSURANCE RATE MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS, PANEL 416 OF 656 (COMMUNITY NUMBER 25017 PANEL 416 SUFFIX E) WITH AN EFFECTIVE DATE OF JUNE 4, 2010.
4. THE FIELD SURVEY FOR THIS PROJECT WAS COMPLETED ON JANUARY 4, 2024.
5. THE UTILITY LOCATIONS AND SIZES AS SHOWN HEREON ARE BASED ON SURFACE EVIDENCE AND ARE APPROXIMATE. DIG SAFE SHOULD BE CALLED PRIOR TO ANY EXCAVATIONS.
6. THE RECORD DRAINAGE AND SEWER LINES AT SHOWN HEREON WERE EXTRACTED FROM A CAD FILE SUPPLIED BY WARNER LARSON, INC. THE TITLE OF THE PLAN IN THE CAD FILE IS "SITE PLAN OF LAND BRACKETT SCHOOL ARLINGTON, MASS. (MIDDLESEX COUNTY)" PREPARED BY MEDFORD ENGINEERING & SURVEY DATED APRIL 6, 2009.

VERTICAL CONTROL FOR SITE - TEMPORARY BENCHMARKS (TBM)	
TBM "A" ~ X-CUT IN ARROW BOLT	ELEVATION= 297.49 (N.A.V.D. 88)
TBM "B" ~ NAIL SET IN 28" OAK	ELEVATION= 293.62 (N.A.V.D. 88)

Glen D. Reed
GLEN D. REED, P.L.S. LICENSE NO. 40766
AS AGENT FOR REED LAND SURVEYING, INC.
NOT INDIVIDUALLY

SHEET 1 OF 2

Reed

Land Surveying, Inc.

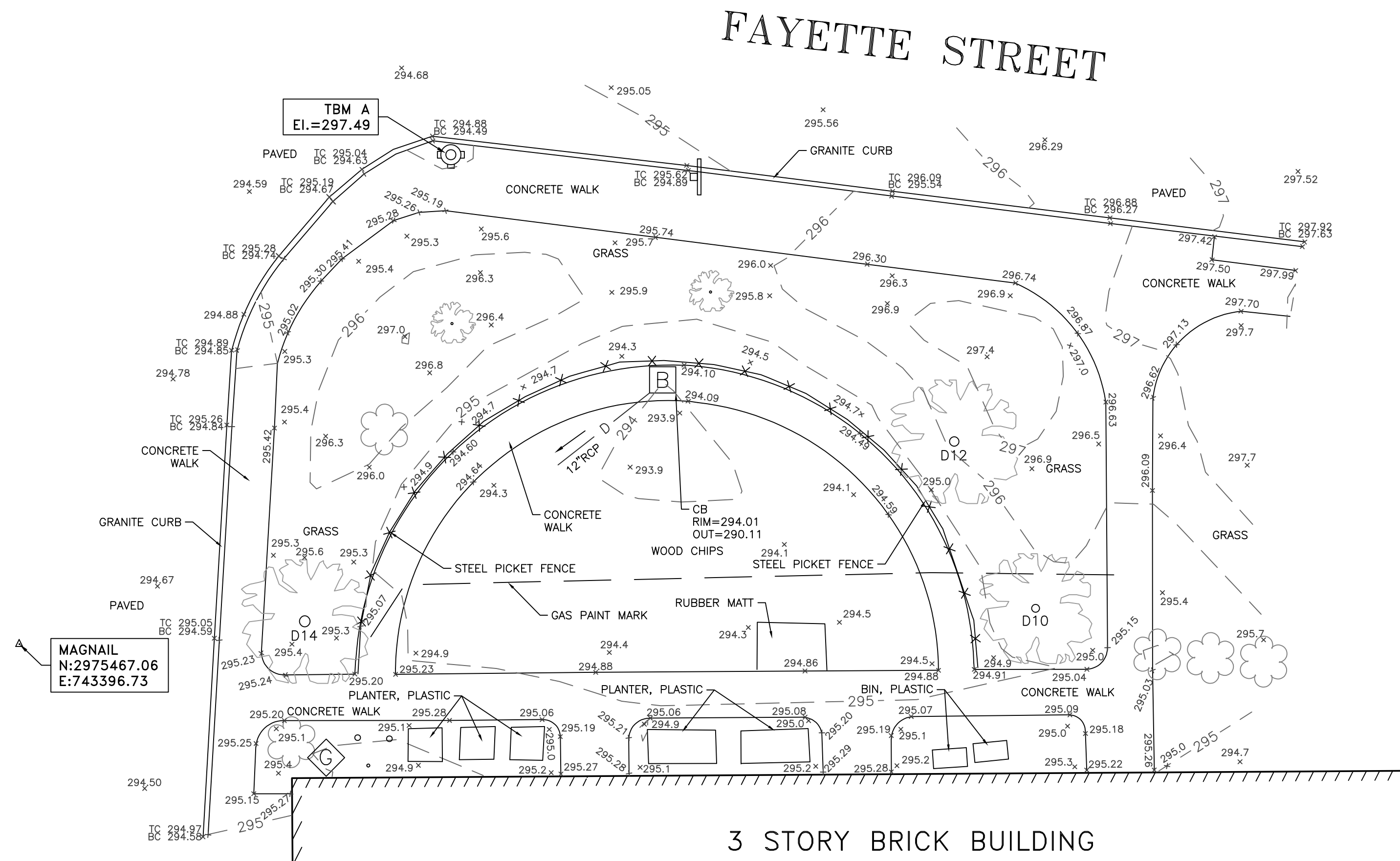
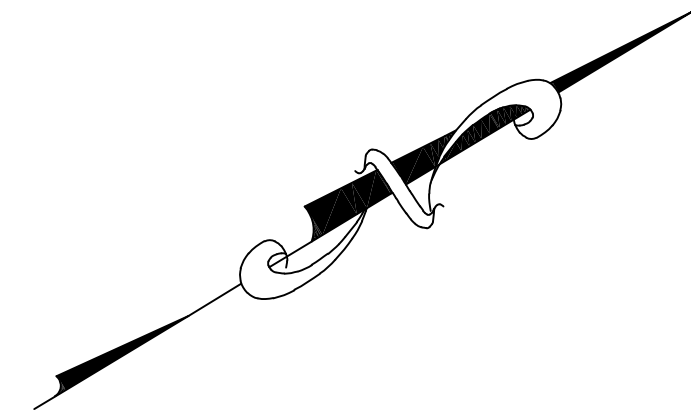
109 RHODE ISLAND ROAD, SUITE 4A
LAKEVILLE, MASSACHUSETTS 02347
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TOPOGRAPHIC
SURVEY
BRACKETT
ELEMENTARY
SCHOOL
66 EASTERN AVENUE
ARLINGTON, MASSACHUSETTS
(MIDDLESEX COUNTY)
PREPARED FOR
WARNER LARSON, INC.

FILE: 23044 TOPO
DATE: MARCH 7, 2024, 2024

10 0 10 20
SCALE: 1"=10'



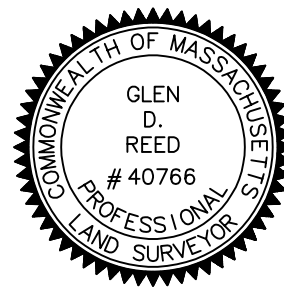
UTILITY LINE LEGEND		
DRAINAGE	— D —	
SEWER	— S —	
WATER	— W —	
GAS	— G —	
CABLE	— C —	
TELEPHONE	— T —	
ELECTRIC	— E —	
STEAM	— STM —	
UNDERGROUND	— UE —	
ELECTRIC OVERHEAD	— OHW —	
WIRES	— —	

VERTICAL CONTROL FOR SITE – TEMPORARY BENCHMARKS (TBM)	
TBM "A" ~ X-CUT IN ARROW BOLT ELEVATION= 297.49 (N.A.V.D. 88)	
TBM "B" ~ NAIL SET IN 28" OAK ELEVATION= 293.62 (N.A.V.D. 88)	

NOTES:

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2. THE COORDINATES SHOWN HEREON AND BASIS OF THE BEARINGS ARE REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND – NORTH AMERICAN DATUM OF 1983). THE COORDINATES WERE DERIVED FROM GPS MEASUREMENTS REFERENCED TO THE MASSACHUSETTS CONTINUOUSLY OPERATING REFERENCE STATION NETWORK (MACORS).
3. THE AREA SURVEYED IS LOCATED WITHIN FLOOD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS INDICATED ON THE F.E.M.A. FLOOD INSURANCE RATE MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS, PANEL 416 OF 656 (COMMUNITY NUMBER 25017 PANEL 416 SUFFIX E) WITH AN EFFECTIVE DATE OF JUNE 4, 2010.
4. THE FIELD SURVEY FOR THIS PROJECT WAS COMPLETED ON JANUARY 4, 2024.
5. THE UTILITY LOCATIONS AND SIZES AS SHOWN HEREON ARE BASED ON SURFACE EVIDENCE AND ARE APPROXIMATE. DIG SAFE SHOULD BE CALLED PRIOR TO ANY EXCAVATIONS.

DRILLED HOLE
N:2975648.70
E:743514.52



Glen D. Reed
GLEN D. REED, P.L.S. LICENSE NO. 40766
AS AGENT FOR REED LAND SURVEYING, INC.
NOT INDIVIDUALLY

SHEET 2 OF 2

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(508) 923-1181 FAX: (508) 923-1191

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**TOPOGRAPHIC
SURVEY
BRACKETT
ELEMENTARY
SCHOOL**

**66 EASTERN AVENUE
ARLINGTON, MASSACHUSETTS
(MIDDLESEX COUNTY)**

**PREPARED FOR
WARNER LARSON, INC.**

FILE: 23044 TOPO

DATE: MAY 14, 2024



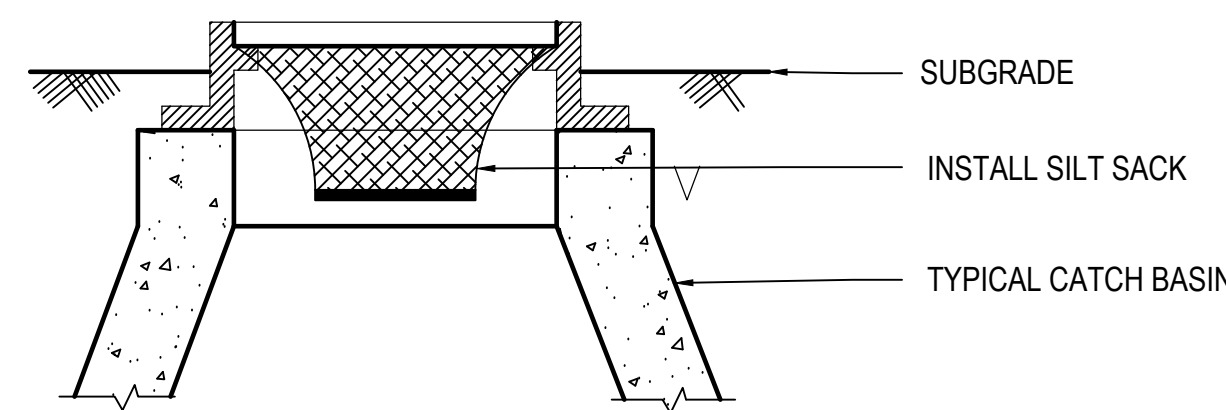
SITE PREPARATION NOTES:

EXISTING CONDITIONS INFORMATION IS FROM A SURVEY PERFORMED BY Reed Land Surveying, LAKEVILLE, MA, IN MARCH, 2024.

- CONTRACTOR SHALL REMOVE ALL EXISTING STRUCTURES, FOOTINGS, PAVEMENT, WALKS, WALLS, STAIRS, TREES, SHRUBS, ETC. NECESSARY TO COMPLETE THE WORK UNDER THIS CONTRACT. ALL ITEMS, INCLUDING BUT NOT LIMITED TO: STRUCTURES AND RELATED FOOTINGS, SITE AMENITIES, FENCES AND FENCE FOOTINGS LOCATED WITHIN THE LIMIT OF WORK LINE SHALL BE REMOVED AND LEGALLY DISPOSED OF UNLESS NOTED OTHERWISE.
- ITEMS TO BE SALVAGED SHALL BE STORED ON-SITE WITHIN CONSTRUCTION FENCING AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
- SALVAGE ALL SITE SIGNAGE REQUIRED TO BE REMOVED BY THE WORK OF THIS PROJECT, AND PROVIDE TO OWNER'S REPRESENTATIVE. DISPOSE OF FOOTINGS AND DAMAGED POSTS. REINSTALL SALVAGED SIGNS WHERE DIRECTED BY THE LANDSCAPE ARCHITECT IN THE FIELD USING NEW APPROVED FENCE-MOUNTING HARDWARE, AND POSTS WHERE REQUIRED.
- EXISTING FOUNDATIONS AND BELOW GRADE REMAINS OF THE FORMER FOOTINGS SHALL BE REMOVED TO ACCOMMODATE THE PROPOSED IMPROVEMENTS AND FINISH GRADES. ABANDON-IN-PLACE ANY FOUNDATIONS IF ENTIRE REMOVAL IS UNNECESSARY FOR THE PROPOSED IMPROVEMENTS.
- CONTRACTOR SHALL NOTIFY DIGSAFE (1-888-DIG-SAFE) AND VERIFY UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED TO ROADS, WALKS, UTILITIES, SITE IMPROVEMENTS, EXISTING OR PROPOSED, DAMAGED BY THIS PROJECT.
- CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK.
- ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE REGULATORY AGENCIES' REQUIREMENTS.
- CONTRACTOR SHALL PROTECT ALL TREES TO REMAIN WITHIN THE LIMIT OF WORK.
- STRIP AND STOCKPILE ALL TOPSOIL ON SITE FOR AMENDMENT AND REUSE. ASSUME 6" OF TOPSOIL IS AVAILABLE FOR HARVESTING AT MAINTAINED LANDSCAPE AREAS.
- R&D IRRIGATION IN LANDSCAPE ISLAND, VERIFY IN FIELD EXTENT AND SOURCE. PRESERVE IRRIGATION LINE FOR CONNECTION TO NEW LANDSCAPE ISLAND
- PRESERVE ACCESS FOR ABUTTERS.
- FURNISH AND INSTALL TEMPORARY CONSTRUCTION FENCING TO SECURE LIMIT OF WORK AREAS AND STORED MATERIALS AND EQUIPMENT FROM UNAUTHORIZED ACCESS.
- ALL EXPOSED AREAS TO HAVE EROSION CONTROL PROTECTION PER SPECIFICATION.
- ALL STOCKPILED SOIL TO BE COVERED.
- CONTRACTOR TO MAINTAIN EMERGENCY EGRESS FROM ALL EXTERIOR DOORS.

LEGEND:

- REFER TO SITE DEMOLITION & PREPARATION LEGEND ON SHEET L102



SECTION

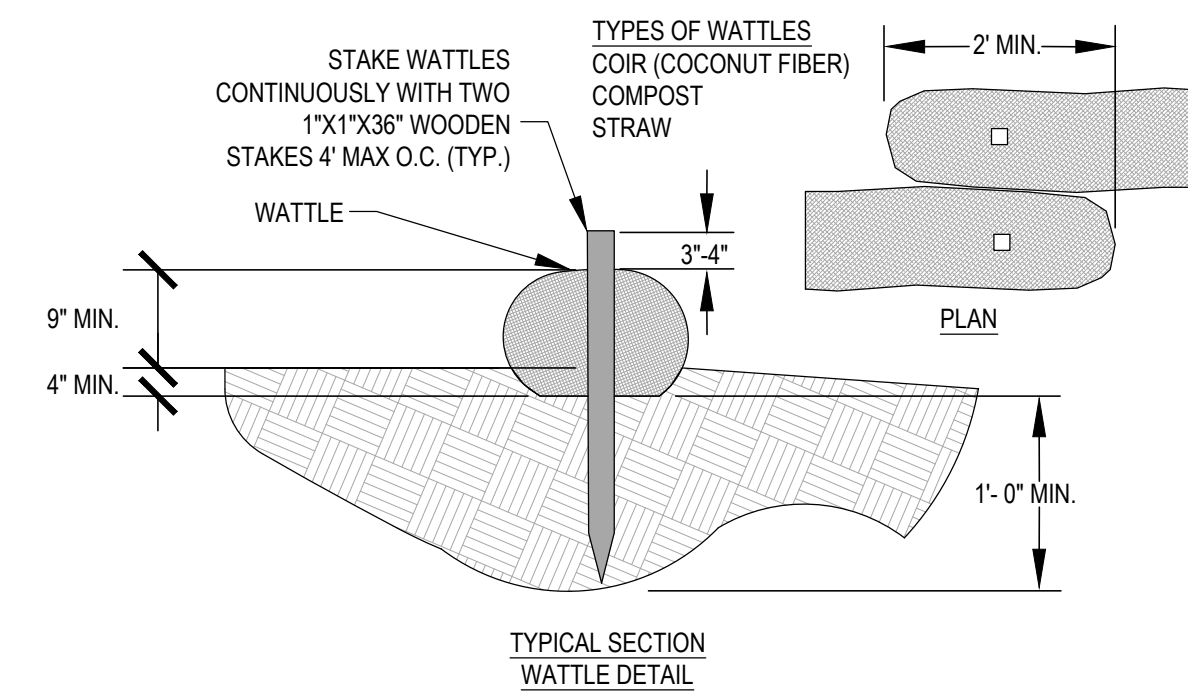
NOTES:

- INSTALL SILT SACK AT ALL EXISTING CATCH BASINS TO REMAIN.
- WHEN CONTENTS OF SILT SACK REACH HALF WAY UP BAG, REMOVE AND DISPOSE OF CONTENTS IN A LEGAL MANNER. IF BAG IS DAMAGED IN ANY WAY, DISPOSE OF BAG COMPLETELY AND REPLACE IMMEDIATELY.

4

CATCH BASIN INLET EROSION PROTECTION

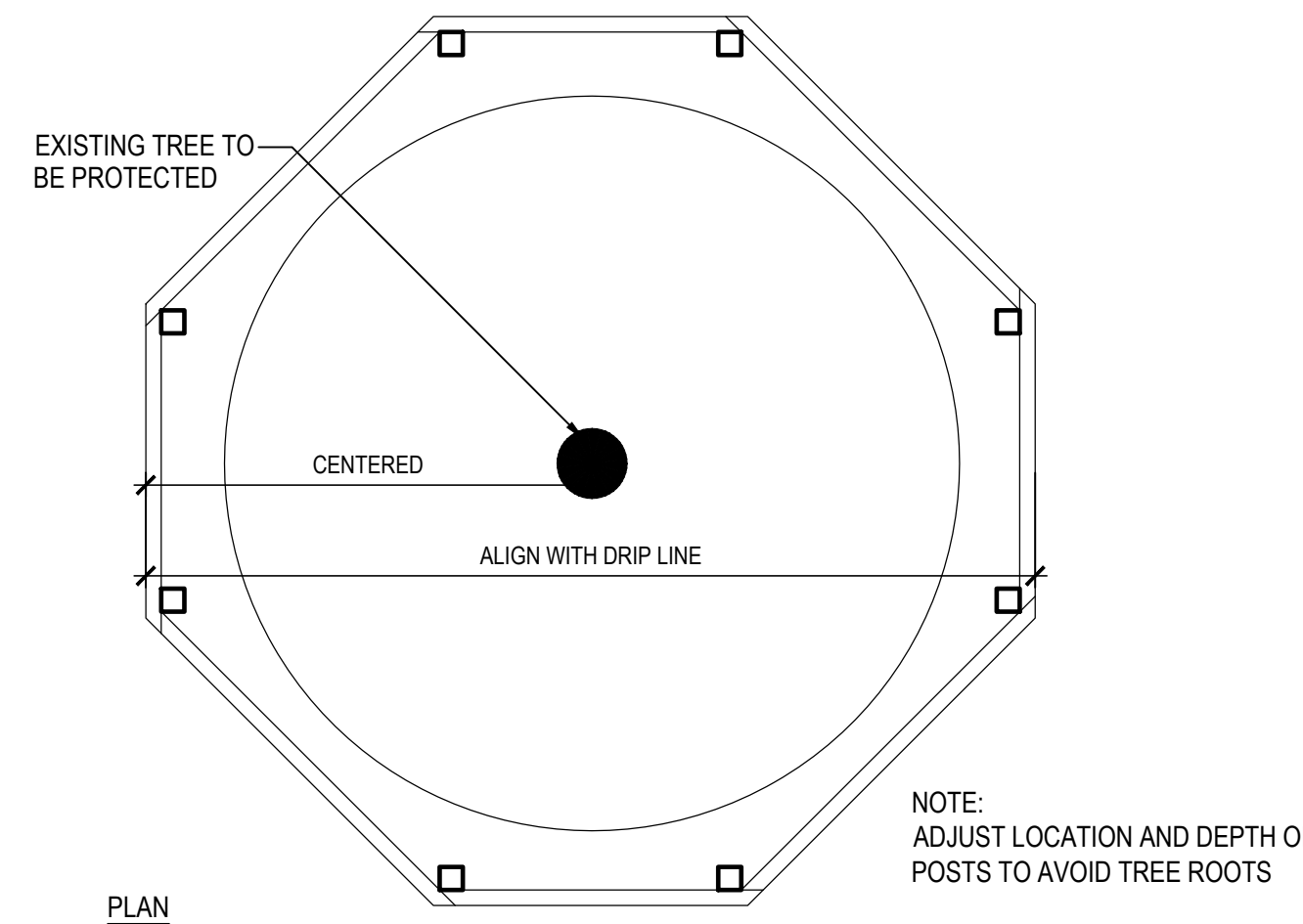
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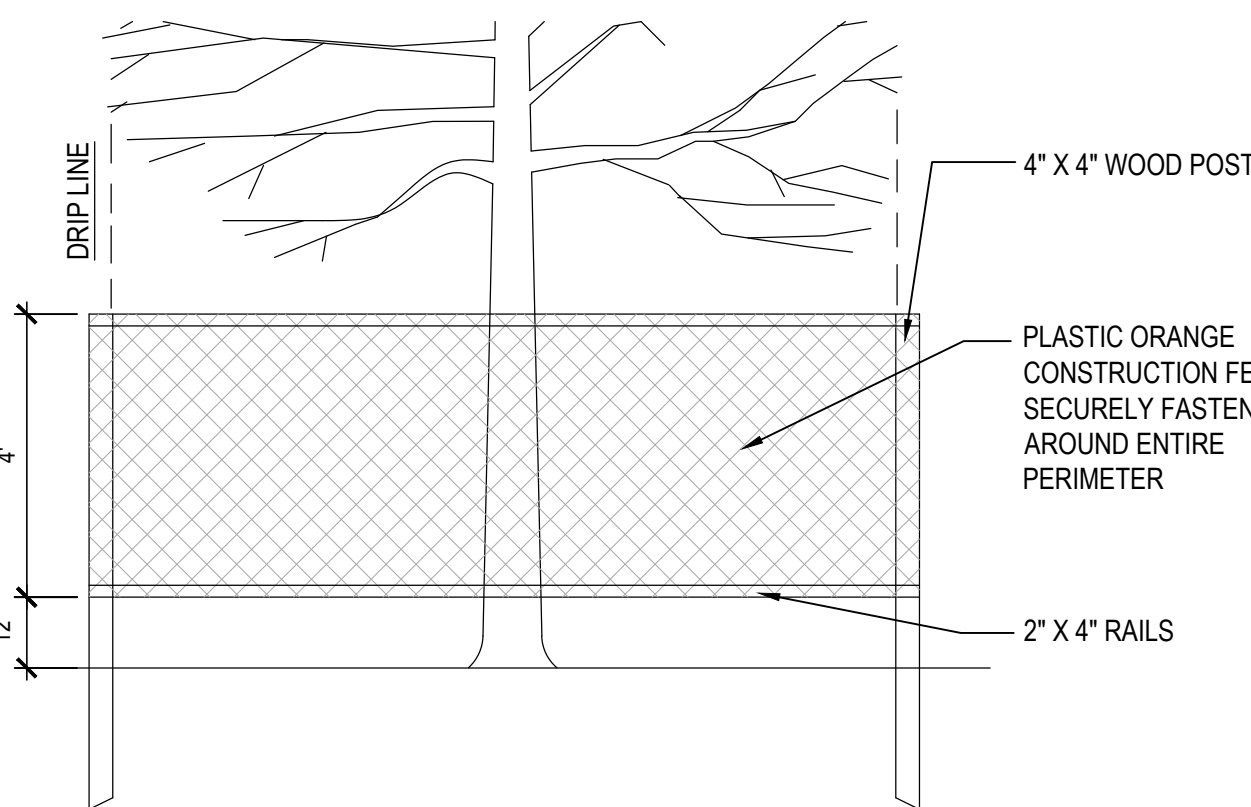
3

STRAW WATTLE

SCALE: 1" = 1'-0"



PLAN



SECTION

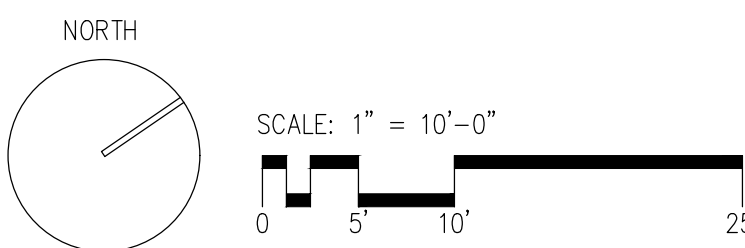
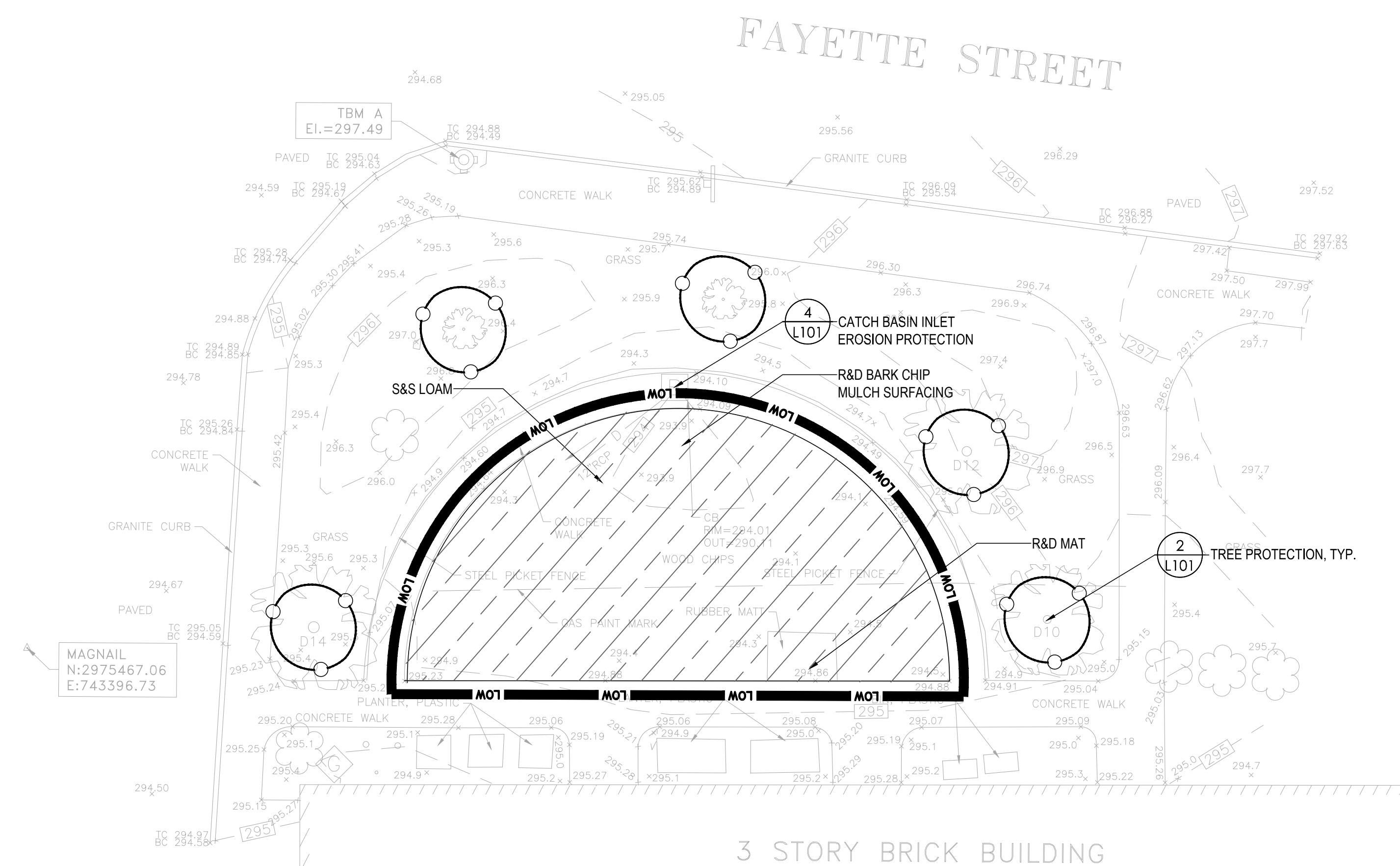
NOTES:

- TREE PROTECTION TO REMAIN IN PLACE THROUGHOUT CONSTRUCTION. REMOVE FOR FINAL LANDSCAPE TREATMENT.
- ADJUST LOCATION OF TREE PROTECTION WITHIN TREE DRIPLINE ONLY WHEN NECESSARY TO PERFORM WORK SHOWN ON DRAWINGS.
- STOCKPILING OF SOILS, STORING OF MATERIALS, PARKING OF VEHICLES OR LOCATION OF TEMPORARY STRUCTURES SHALL NOT OCCUR AT ANY TIME WITHIN THE DRIPLINE OF TREES TO REMAIN.

2

TREE PROTECTION

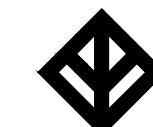
SCALE: 1" = 1'-0"



1

KINDERGARTEN AREA

SCALE: 1" = 10'-0"



WARNER LARSON
LANDSCAPE ARCHITECTS

150 WEST BROADWAY, BOSTON, MA 02127
617.464.1440 warnerlarson.com

BRACKETT
ELEMENTARY
SCHOOL
PLAYGROUND

66 EASTERN AVE
ARLINGTON
MASSACHUSETTS

PREPARED FOR:
TOWN OF ARLINGTON
PARKS AND OPEN SPACE

BID DOCUMENTS

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 05-22-2024

SCALE: AS NOTED

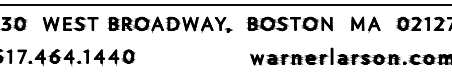
JOB #: 22315

DRAWN BY: YL/AA

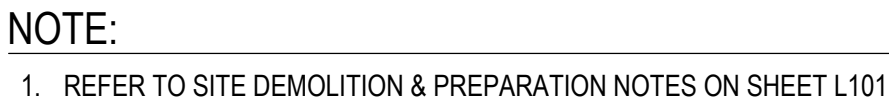
CHECKED BY: JE/DW

SITE DEMOLITION &
PREPARATION
PLAN - 1

L101



PREPARED FOR:
TOWN OF ARLINGTON
PARKS AND OPEN SPACE



L102

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REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 05-22-2024

SCALE: AS NOTED

JOB #: 22315

DRAWN BY: YL/AA

CHECKED BY: JE/DW

LAYOUT AND
MATERIALS PLAN - 1

L201

P.I.P. RUBBER SAFETY SURFACING, MINIMUM THICKNESS

2.5	2.5" THICKNESS (4' FALL HEIGHT)
3.0	3.0" THICKNESS (5' FALL HEIGHT)
3.5	3.5" THICKNESS (6' FALL HEIGHT)
4.0	4.0" THICKNESS (7' FALL HEIGHT)
4.5	4.5" THICKNESS (9' FALL HEIGHT)
5.0	5.0" THICKNESS (10' FALL HEIGHT)
6.0	6.0" THICKNESS (12' FALL HEIGHT)

NOTE:
MINIMUM THICKNESS ARE APPROXIMATE AND BASED ON FALL
HEIGHT OF EQUIPMENT. THE FINAL POURED IN PLACE
SAFETY SURFACING THICKNESS SHALL BE DETERMINED
BASED ON FINAL APPROVED PRODUCT AND SHALL BE LESS
THAN GMAX OF 150 OR HIC 850 AT THE TIME OF
INSTALLATION, SEE SPECIFICATIONS.

SAFETY SURFACING USE ZONES INDICATED ON THE PLAN
ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE TO
FURNISH AND INSTALL ALL SAFETY SURFACING IN
ACCORDANCE WITH CPSC STANDARDS AND THE
SPECIFICATIONS.

MATERIAL NOTES:

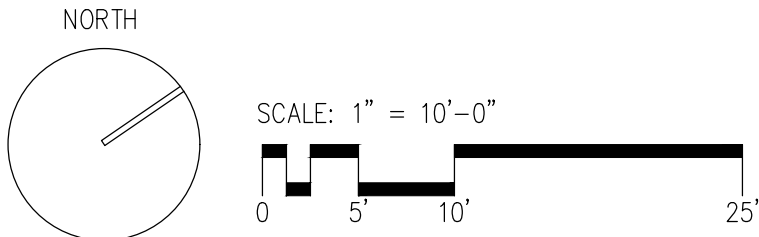
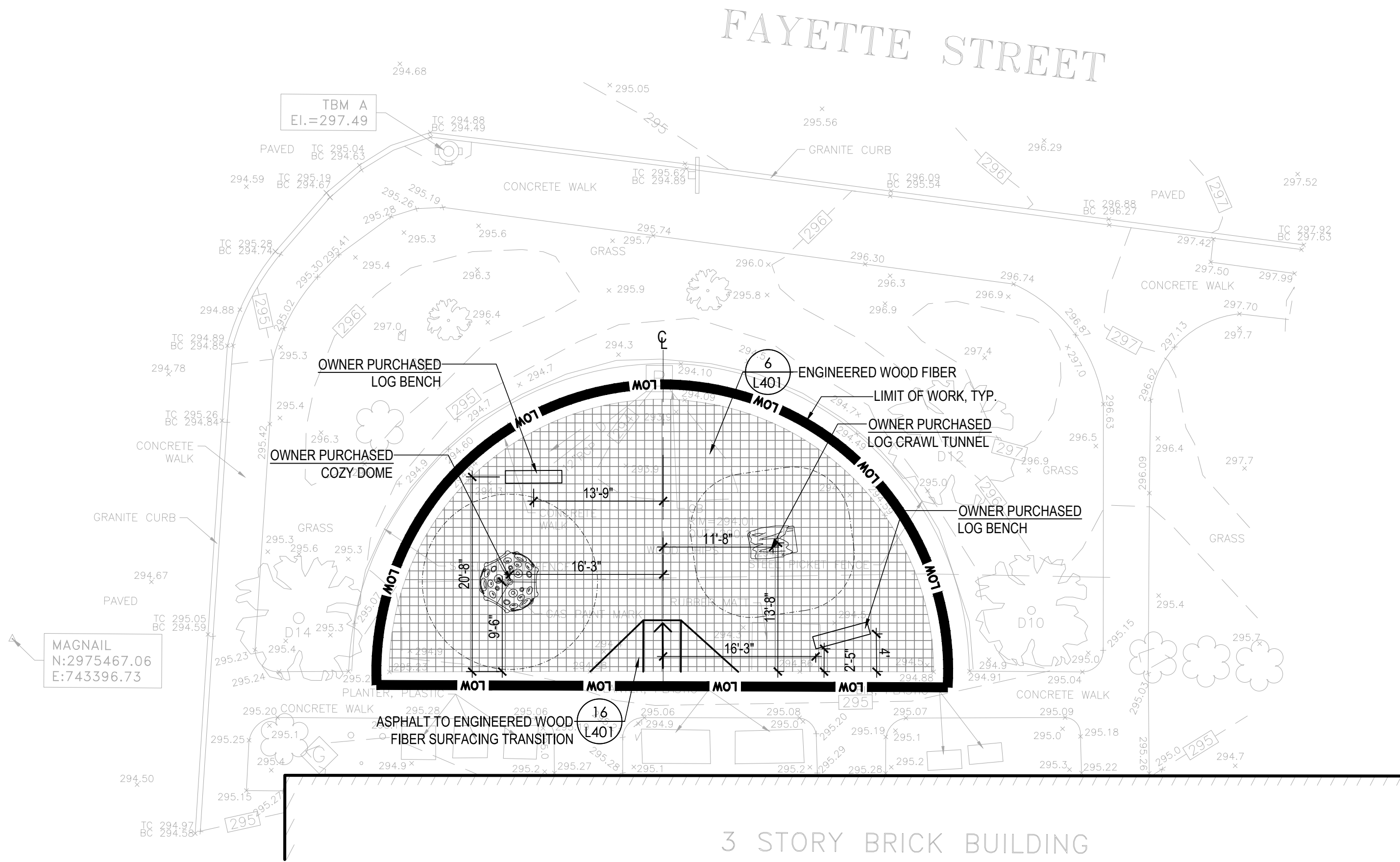
- CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK.
- CONTRACTOR SHALL NOTIFY DIGSAFE 1-888-DIG-SAFE AND VERIFY UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED TO ROADS, WALKS, UTILITIES, SITE IMPROVEMENTS, EXISTING OR PROPOSED, DAMAGED BY THIS PROJECT.
- ITEMS INDICATED AS "RELOCATED" ARE SALVAGED AND STORED FROM EXISTING SITE AND SHALL BE REINSTALLED AS PART OF THIS CONTRACT. FURNISH AND INSTALL NEW VERTICAL GRANITE CURBING SUCH AS RADIUS CORNERS, THAT ARE NOT INCLUDED IN THE SALVAGED CURBING.
- CONTRACTOR SHALL COORDINATE LOCATION OF ALL UTILITIES (LINES, DUCTS, CONDUITS, SLEEVES, FOOTINGS, ETC.) WITH LOCATIONS OF PROPOSED SITE IMPROVEMENTS (WALLS, TREE ROOTBALLS, PROPOSED LIGHTING FOOTINGS, ETC.). CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO CONTINUING WORK.
- SALVAGED TRASH RECEPTACLES TO BE LOCATED IN FIELD. RECEPTACLES TO BE INSTALLED ON SQUARE CONCRETE PADS PER DETAIL 131/L01.

LAYOUT NOTES:

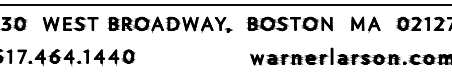
- ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE NOTED.
- THE DIMENSIONS SHOWN ON THE DRAWINGS SHOW DESIGN INTENT AND MUST BE FIELD VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS.
- ALL DIMENSIONS FOR LIGHTS AND SIGNS ARE TO THE CENTERLINE OF THE OBJECT UNLESS OTHERWISE NOTED.
- PROVIDE EXPANSION JOINTS IN CONCRETE WALKS AT 30' O.C. AND CONTROL JOINTS AT 10' O.C. AS PER SPECIFICATIONS, UNLESS OTHERWISE INDICATED ON DRAWINGS.
- ALL CURVES SHALL BE SMOOTH, CONTINUOUS RADII. NO STRAIGHT SECTIONS OR ABRUPT TRANSITIONS.
- WHERE EDGE OF PAVEMENTS MEET WALLS, THEY SHALL ALIGN WITH FACE OF WALL TRUE PERPENDICULAR AND PARALLEL UNLESS OTHER ANGLE SHOWN.
- CONTRACTOR SHALL STAKE OUT ALL IMPROVEMENTS TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- DIMENSIONS ARE TO EXPOSED FACE OF CURB UNLESS OTHERWISE NOTED.

LEGEND:

- REFER TO LAYOUT AND MATERIALS LEGEND ON SHEET L202



1 KINDERGARTEN AREA
SCALE: 1" = 10'-0"



PREPARED FOR:
TOWN OF ARLINGTON
Parks and Open Space



NOTE:

1. REFER TO LAYOUT AND MATERIALS NOTES ON SHEET L20


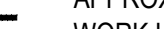

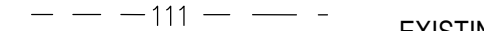




REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 05-22-2024
SCALE: AS NOTED
JOB #: 22315
DRAWN BY: YL/AA
CHECKED BY: JE/DW

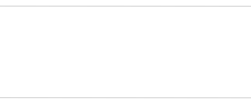
GRADING AND
PLANTING PLAN - 1

L301

GRADING LEGEND:

 LOW 	APPROXIMATE LIMIT OF WORK LINE	 1%	PROPOSED SLOPE
	EXISTING CONTOUR	TS BS	TOP OF STAIR BOTTOM OF STAIR
	PROPOSED CONTOUR	TW BW	TOP OF WALL BOTTOM OF WALL
	EXISTING SPOT ELEVATION	TC BC	TOP OF CURB BOTTOM OF CURB
	PROPOSED SPOT ELEVATION	CB	CATCH BASIN
	PERFORATED UNDERDRAIN	YD	YARD DRAIN
		HP	HIGH POINT

PLANTING LEGEND:

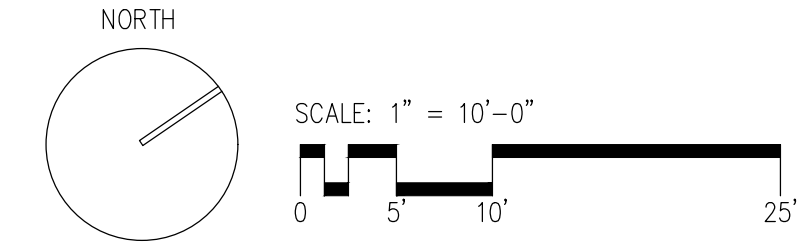
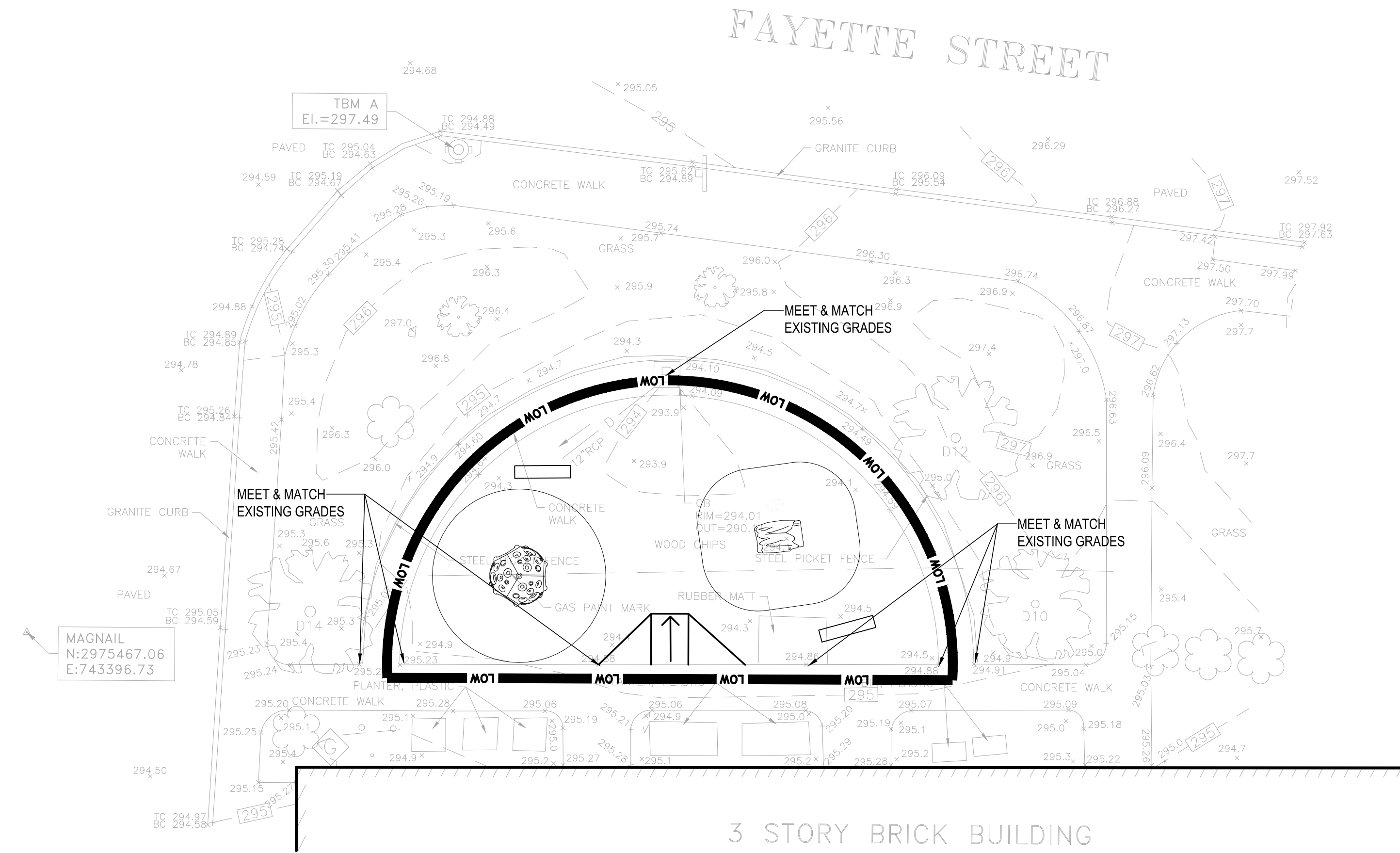
	SEEDED LAWN - SEE SPECIFICATIONS FOR SEED TYPE
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GRADING NOTES

- CONTRACTOR SHALL STAKE OUT ALL SITE IMPROVEMENTS BOTH HORIZONTALLY AND VERTICALLY IN THE FIELD, AND SUCH STAKEOUT TO BE APPROVED BY THE ARCHITECT PRIOR TO CONSTRUCTION.
- SPOT GRADES AND CONTOURS INDICATED ON THE THIS PLAN DESCRIBE FINAL SURFACE ELEVATIONS FOR COMPLETED CONSTRUCTION.
- ALL CHANGES IN PAVEMENT MATERIALS SHALL BE FLUSH WITH EACH OTHER UNLESS OTHERWISE SHOWN.
- IF EXISTING TREE, UTILITIES OR STRUCTURES IMPEDE EXCAVATION ACTIVITIES IN ANY MANNER, CONTRACTOR SHALL INFORM THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO CONTINUING WITH CONSTRUCTION ACTIVITIES.
- REGRADED SLOPES SHALL NOT EXCEED 3:1 SLOPE EXCEPT AS SHOWN ON THE PLANS
- ALL PAVED WALKWAY AREAS, PLAZAS, CROSSWALKS, HANDICAPPED PARKING SPACES, AND ASSOCIATED ACCESS AISLES AND ACCESSIBLE ROUTES SHALL BE GRADED SUCH THAT THEY ARE IN FULL COMPLIANCE WITH THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD.

PLANTING NOTES

- CONTRACTOR SHALL STAKE PLANT LOCATIONS TO BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION. FINAL LOCATIONS TO BE CONFIRMED IN FIELD.
- ALL PLANT MATERIAL AND PLANTING PROCEDURES SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK" PUBLISHED BY THE AMERICAN NURSERYMAN'S ASSOCIATION.
- ALL PLANTS SHALL BE BALLED IN BURLAP UNLESS OTHERWISE INDICATED ON THE PLANT SCHEDULE.
- CONTRACTOR SHALL LOCATE AND VERIFY EXISTING AND NEW UNDERGROUND UTILITY LOCATIONS PRIOR TO PLANTING.
- CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND SPREADING TOPSOIL (6" MINIMUM FINISHED DEPTH). FINE GRADING AND SEEDING ANY AREAS DESIGNATED ON PLAN AND ANY AREAS DISTURBED DURING THE CONSTRUCTION AND NOT OTHERWISE DEVELOPED UNDER THIS CONTRACT BOTH WITHIN AND OUTSIDE OF THE LIMIT OF WORK LINE.
- CONTRACTOR RESPONSIBLE FOR LEGALLY DISPOSING OF ANY UNUSED / UNNEEDED STOCKPILED TOPSOIL.
- ALL PLANT BEDS SHALL RECEIVE 3" DEPTH OF PINE BARK MULCH EXCEPT AS OTHERWISE SHOWN.
- PROVIDE EROSION CONTROL MATTING AT ALL SEEDED SLOPES 3H:1V AND STEEPER AND ALONG BOTTOM OF ALL SWALES IMMEDIATELY AFTER FINE GRADING AND SEEDING.



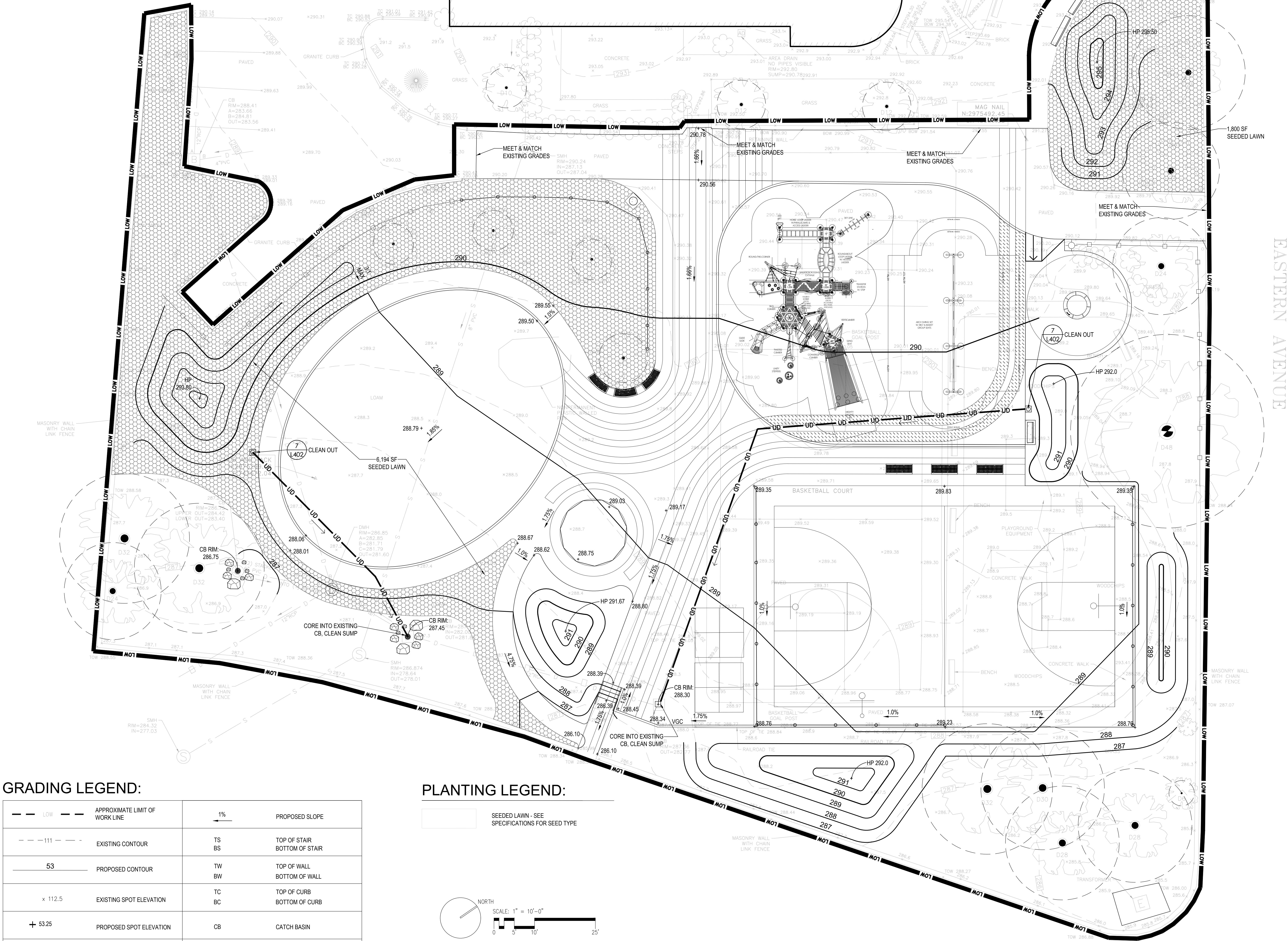
1 KINDERGARTEN AREA
SCALE: 1" = 10'-0"

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 05-22-2024
SCALE: 1"=10'-0"
JOB #: 22315
DRAWN BY: YL/AA
CHECKED BY: JE/DW

EXISTING BUILDING

3 STORY BRICK BUILDING

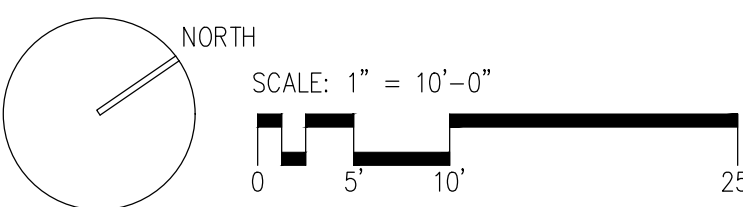


GRADING LEGEND:

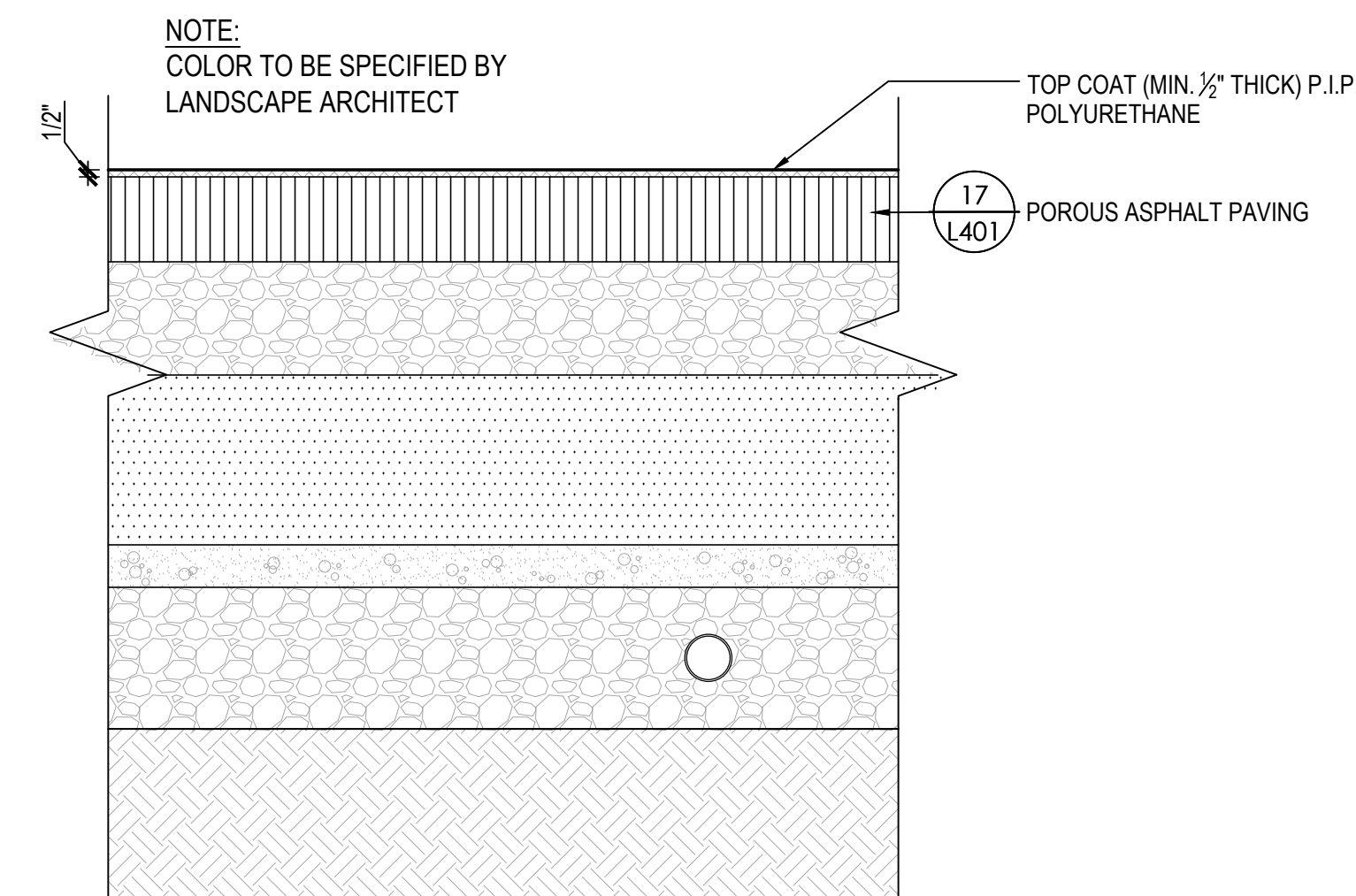
---	LOW	---	APPROXIMATE LIMIT OF WORK LINE	1%	PROPOSED SLOPE
- - - 111 - - -	EXISTING CONTOUR	TS	TOP OF STAIR	BS	BOTTOM OF STAIR
53	PROPOSED CONTOUR	TW	TOP OF WALL	BW	BOTTOM OF WALL
x 112.5	EXISTING SPOT ELEVATION	TC	TOP OF CURB	BC	BOTTOM OF CURB
+ 53.25	PROPOSED SPOT ELEVATION	CB	CATCH BASIN		
D	PERFORATED UNDERDRAIN	YD	YARD DRAIN		
		HP	HIGH POINT		

PLANTING LEGEND:

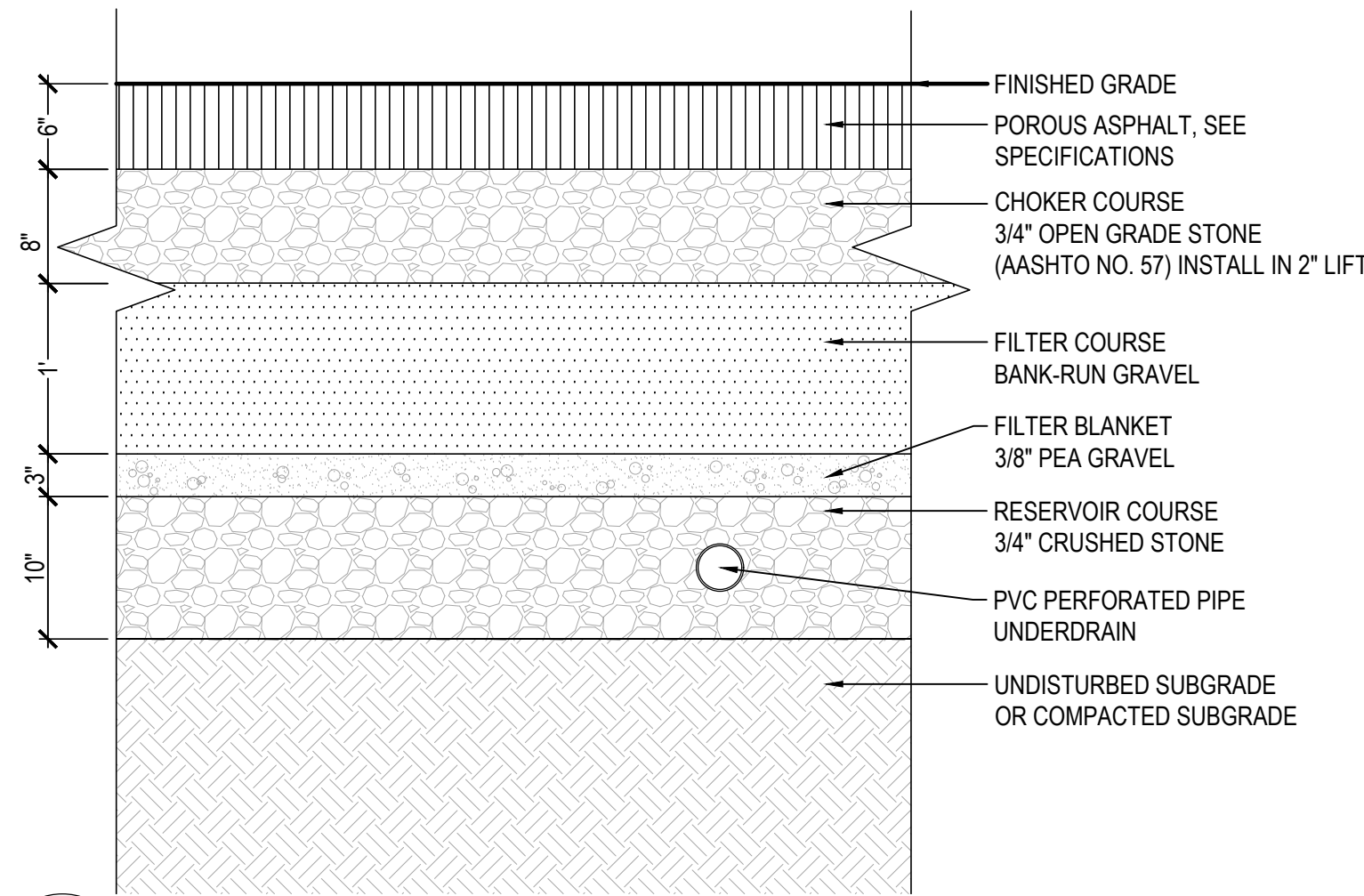
SEEDED LAWN - SEE SPECIFICATIONS FOR SEED TYPE



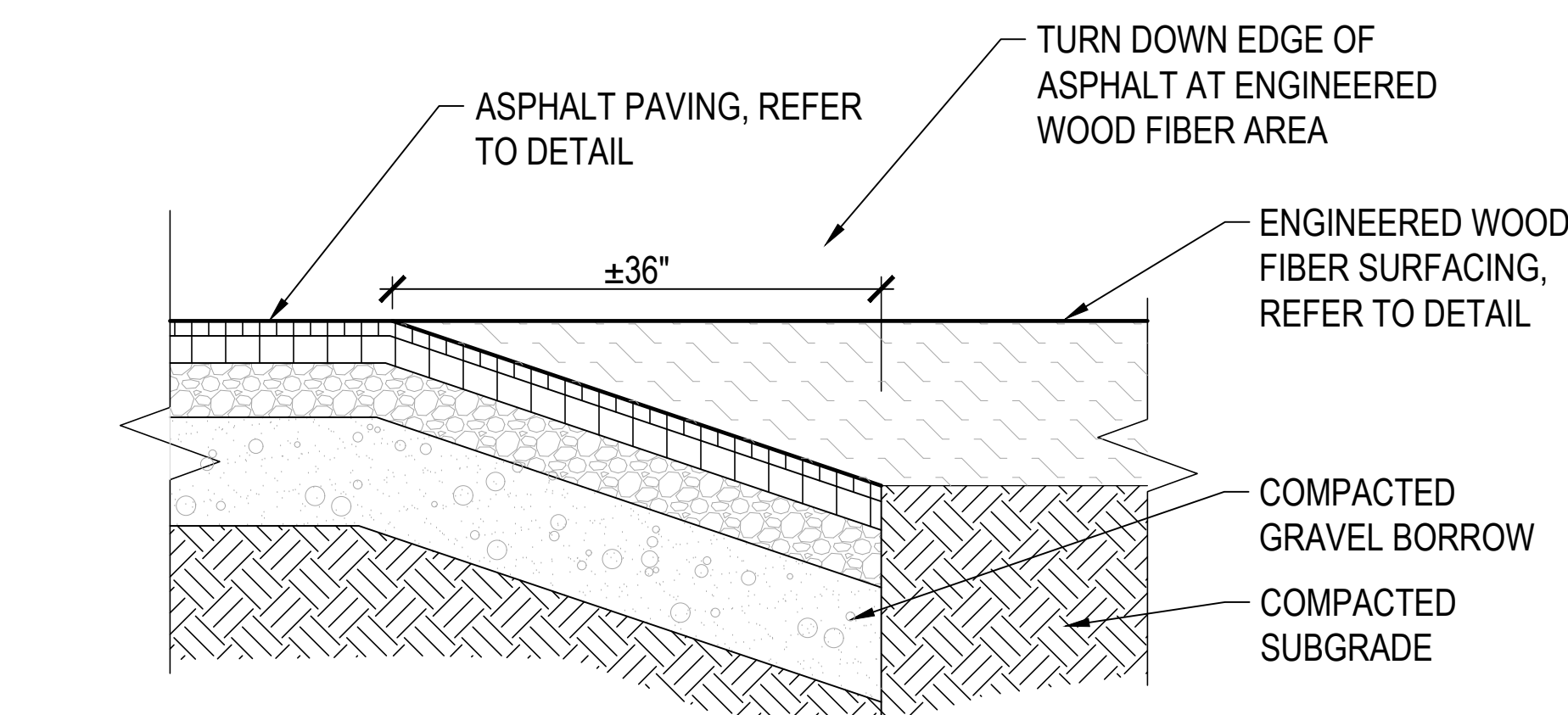
NOTE:
1. REFER TO GRADING AND PLANTING NOTES ON SHEET L301



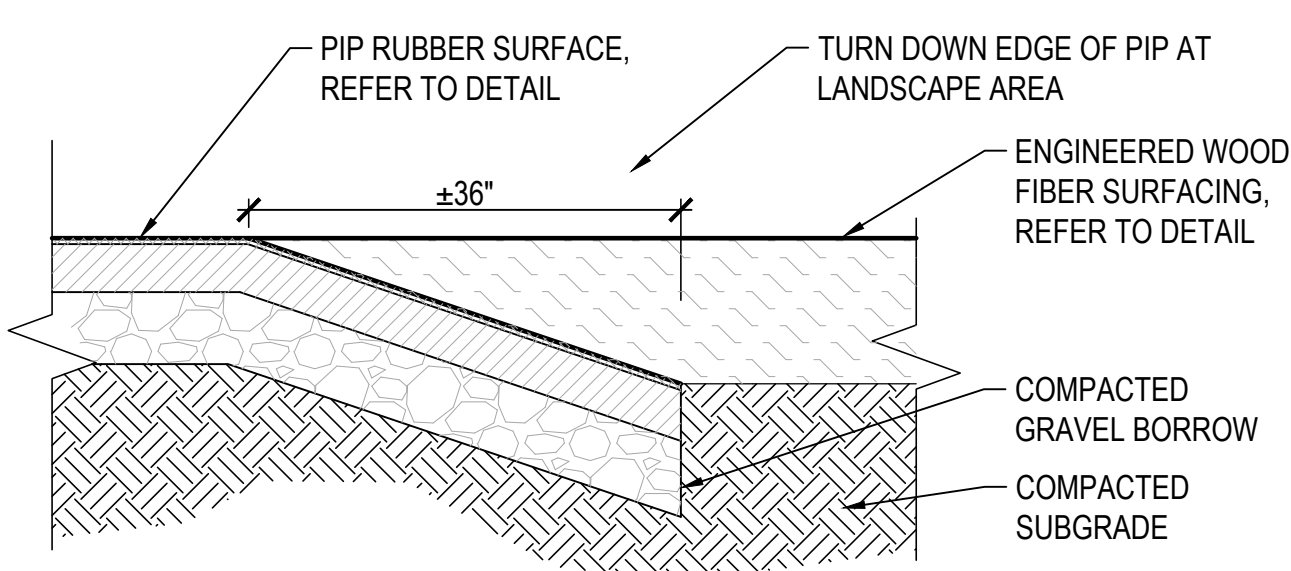
18 ADD ALT #1 - SKIMCOAT PIP RUBBER SURFACING ON POROUS ASPHALT
SCALE: 1" = 1'-0"



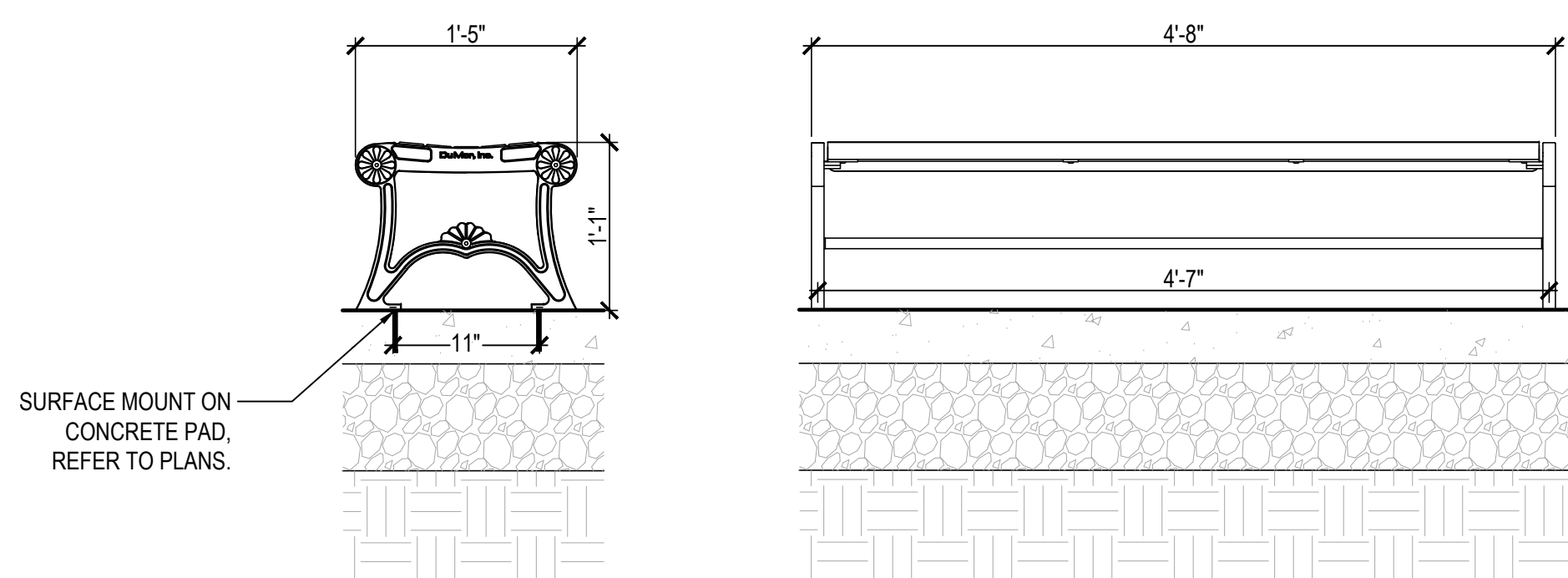
17 POROUS ASPHALT PAVING
SCALE: 1" = 1'-0"



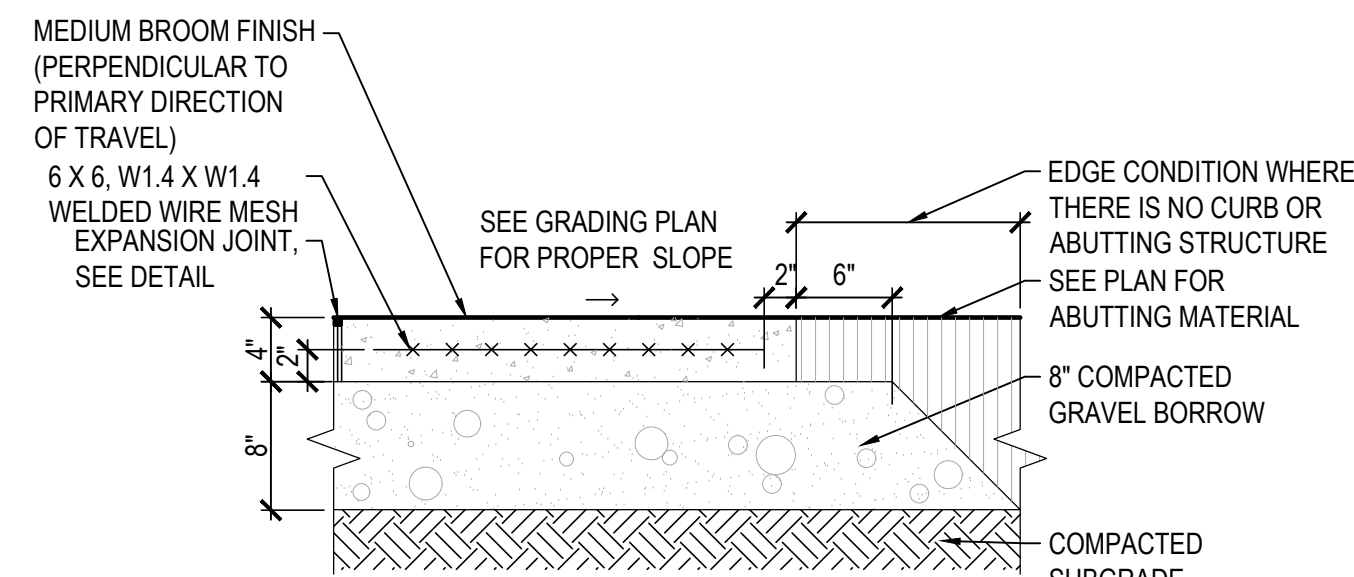
16 ASPHALT TO ENGINEERED WOOD FIBER SURFACING TRANSITION
SCALE: 1" = 1'-0"



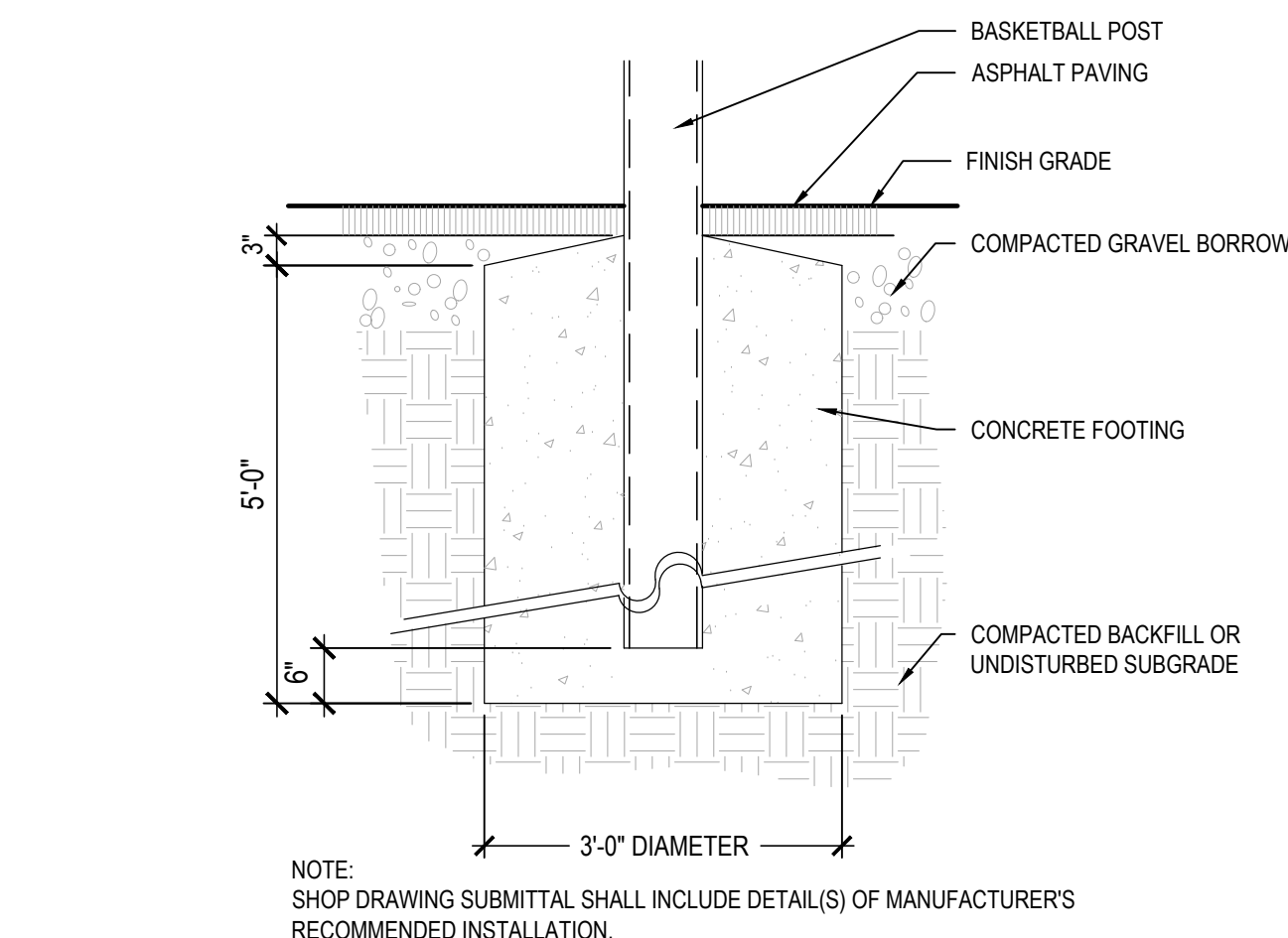
15 PIP RUBBER TO ENGINEERED WOOD FIBER OR MULCH TRANSITION
SCALE: 3/4" = 1'-0"



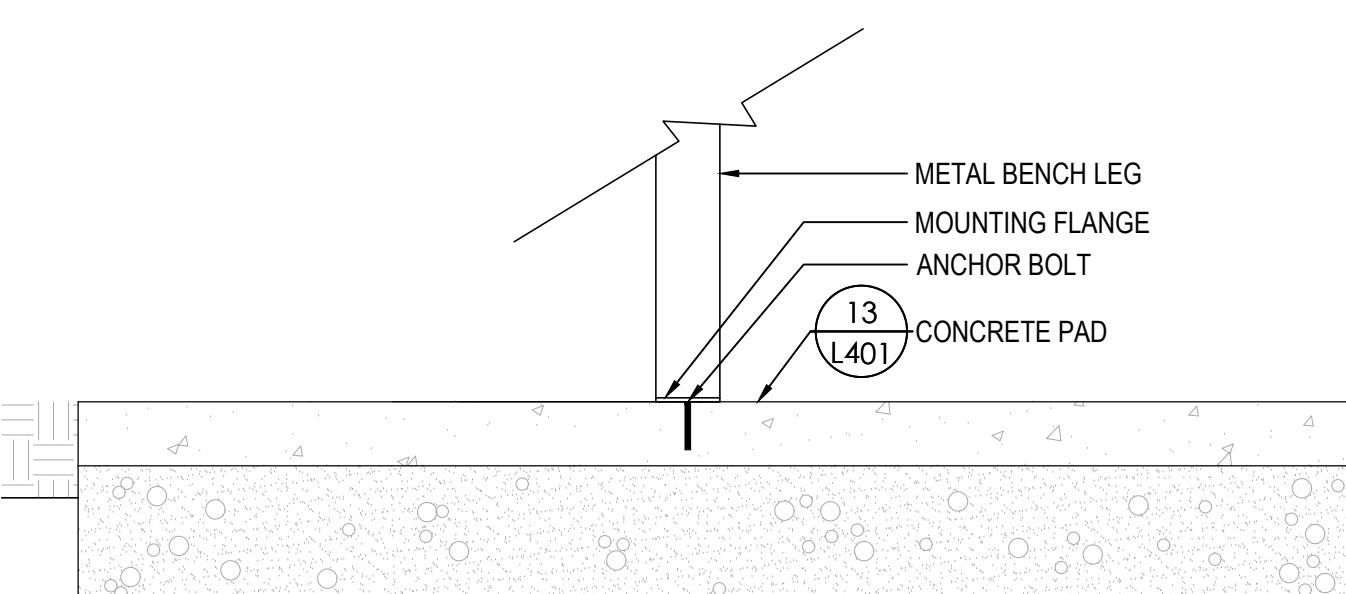
14 OWNER PURCHASED CURVED OR STRAIGHT BACKLESS BENCH ON CONC. PAD
SCALE: 1" = 1'-0"



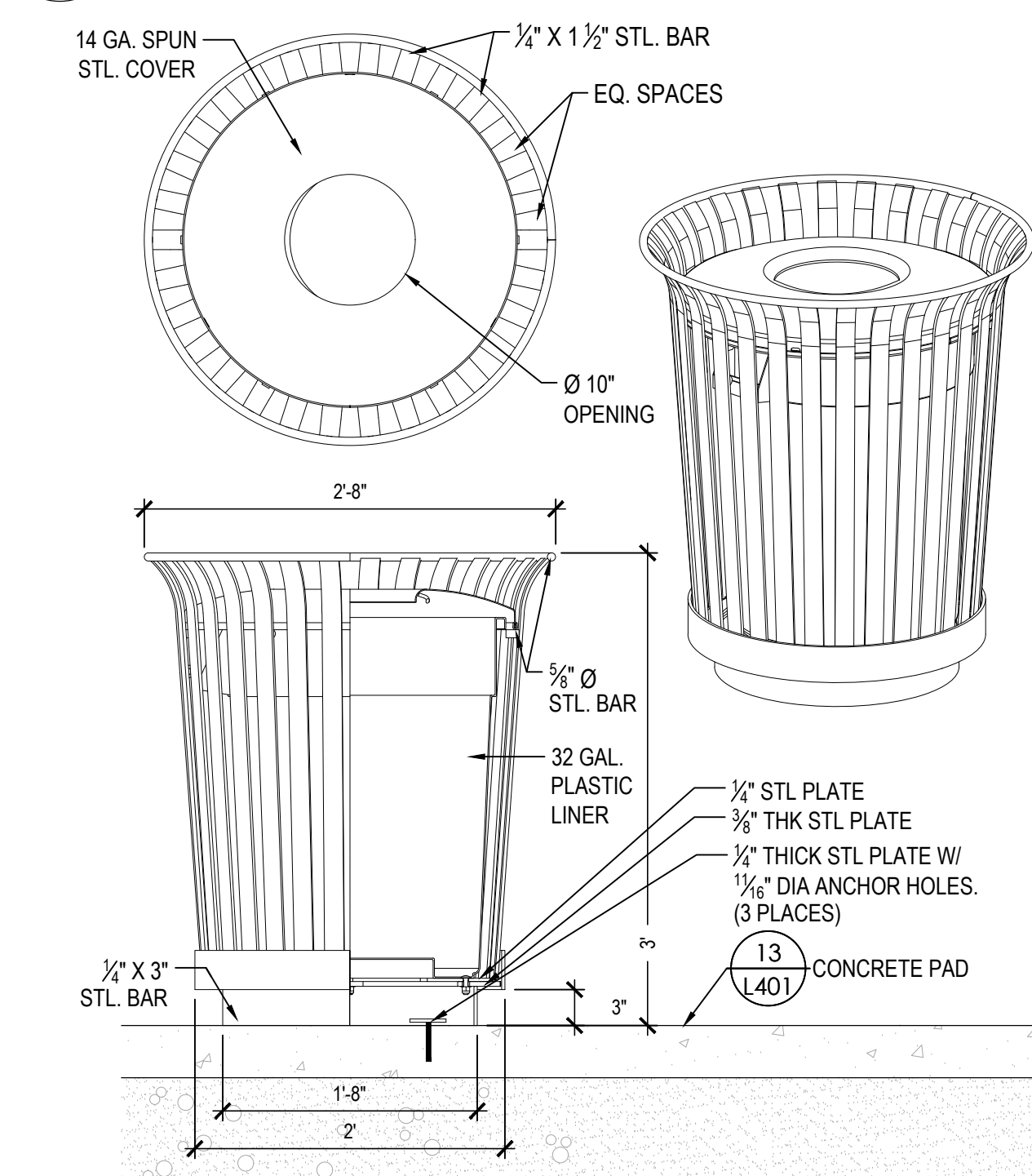
13 CONCRETE PAD
SCALE: 1" = 1'-0"



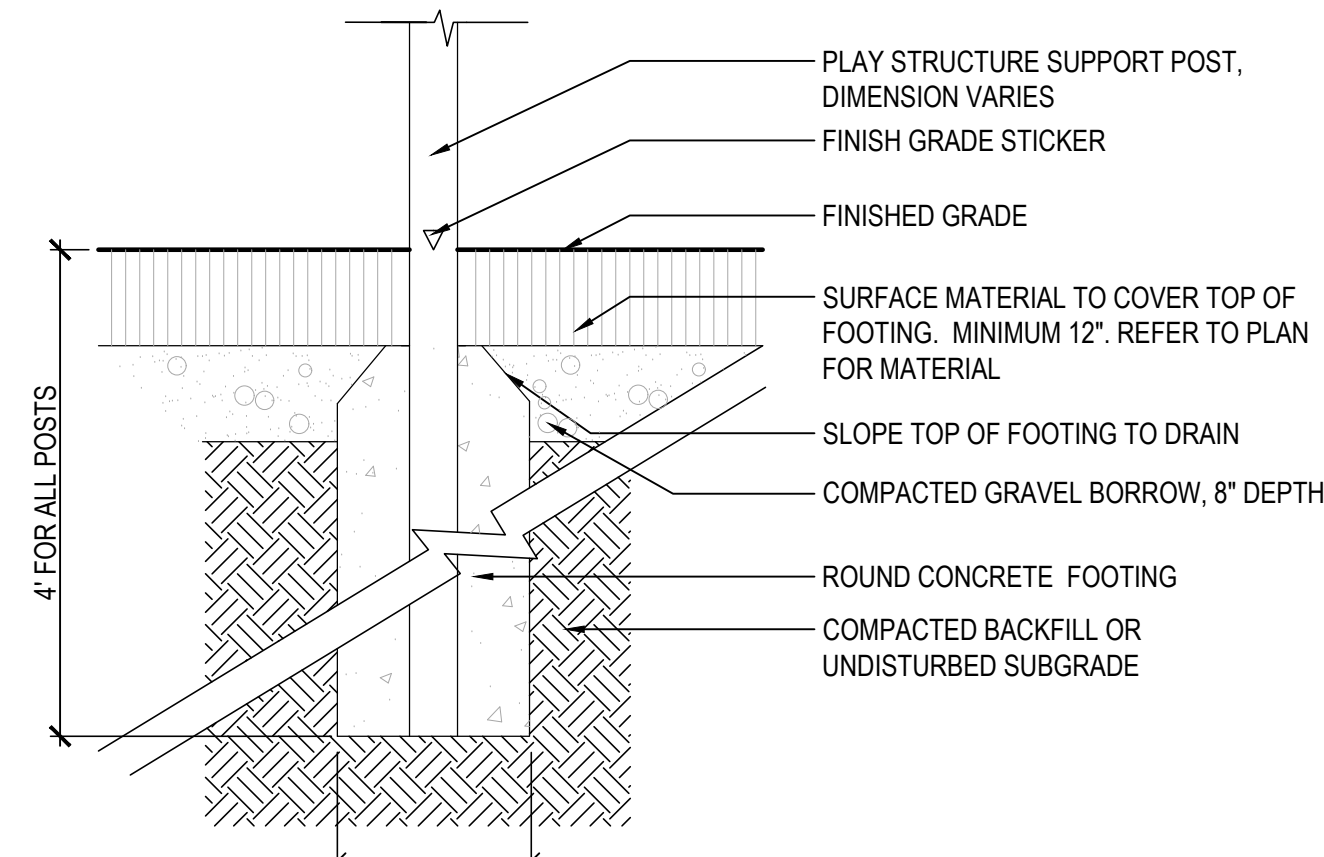
12 BASKETBALL GOAL FOOTING
SCALE: 3/4" = 1'-0"



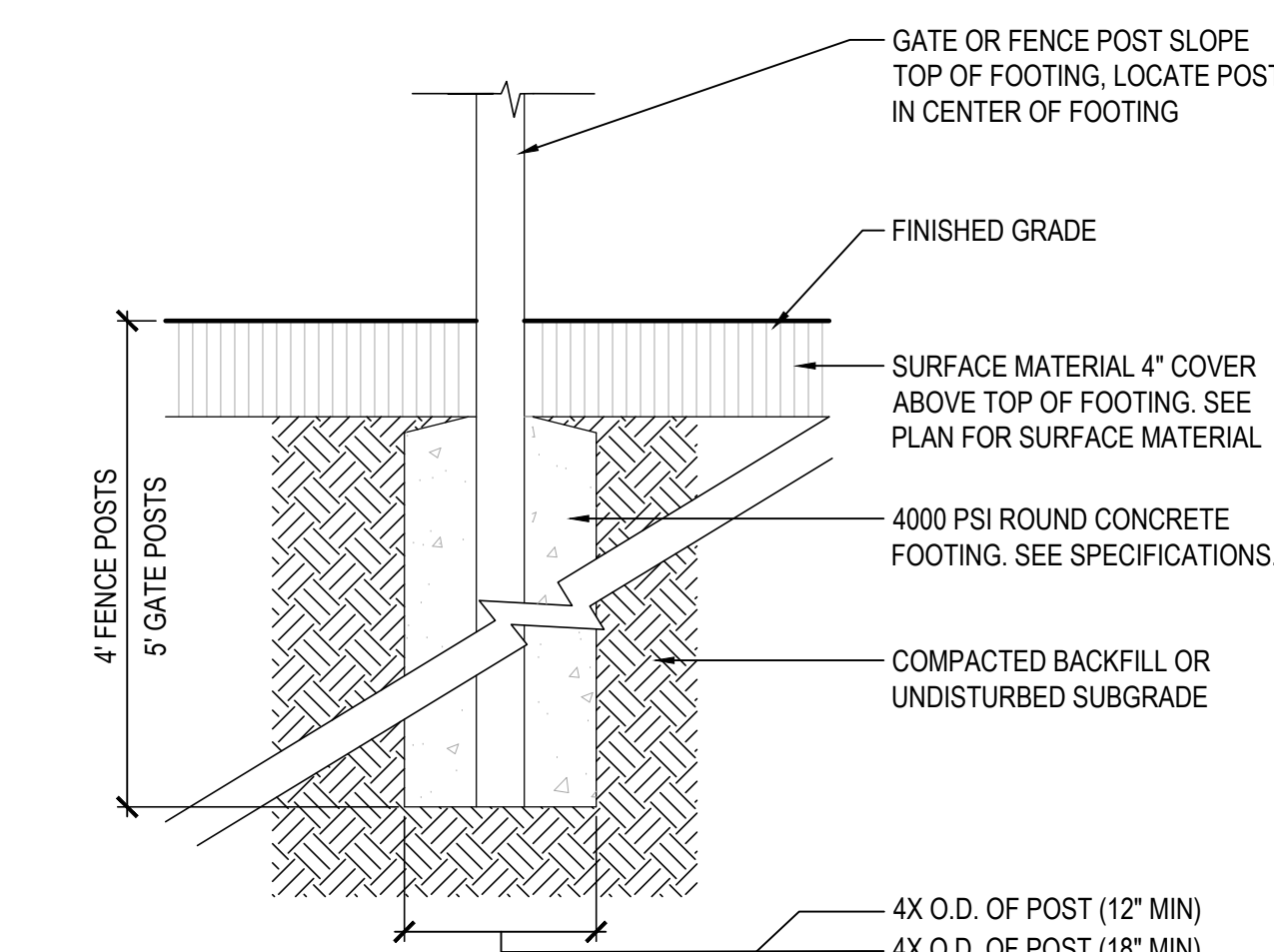
11 RESET BUDDY BENCH
SCALE: 1" = 1'-0"



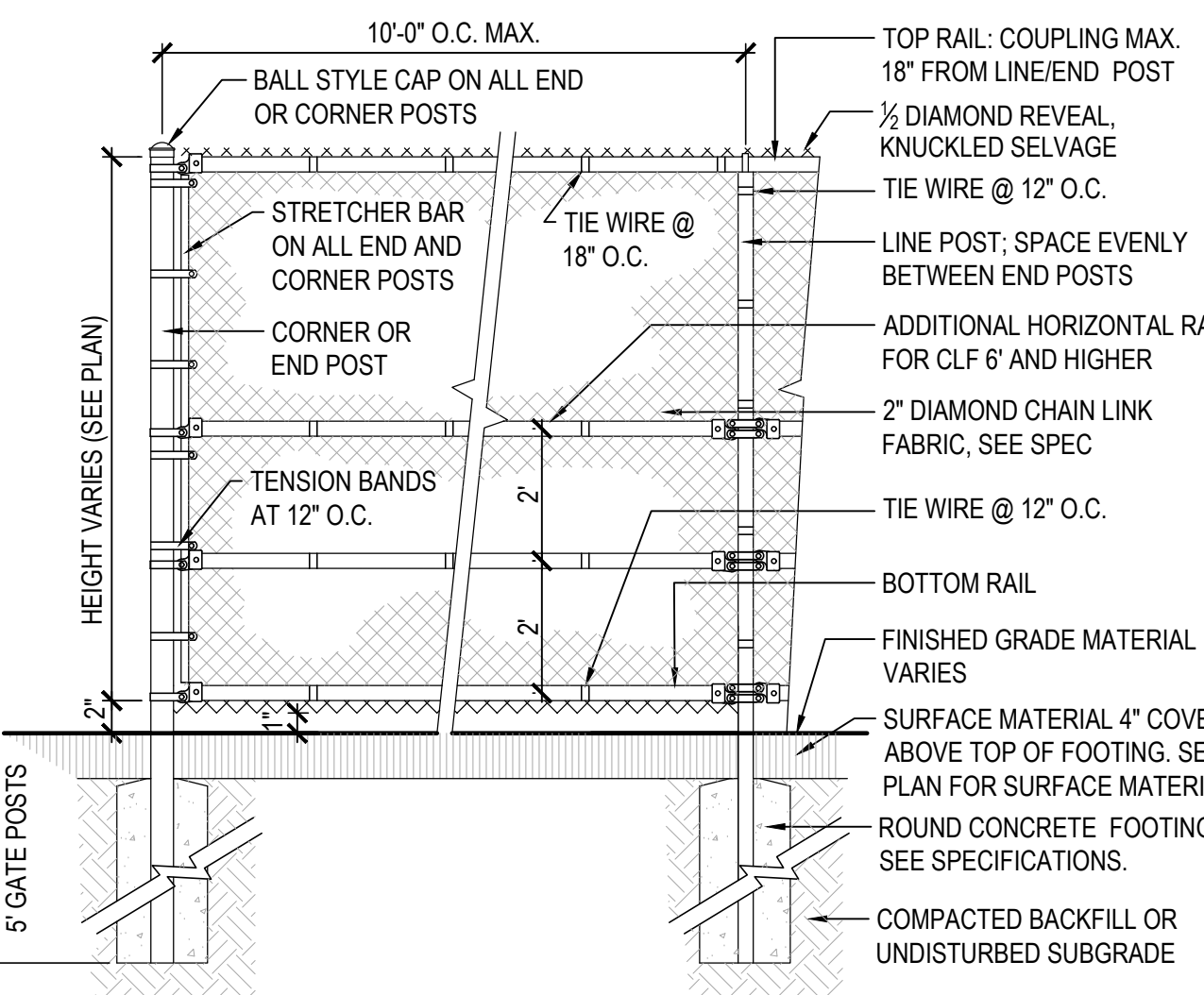
10 OWNER PURCHASED TRASH CAN
SCALE: 1" = 1'-0"



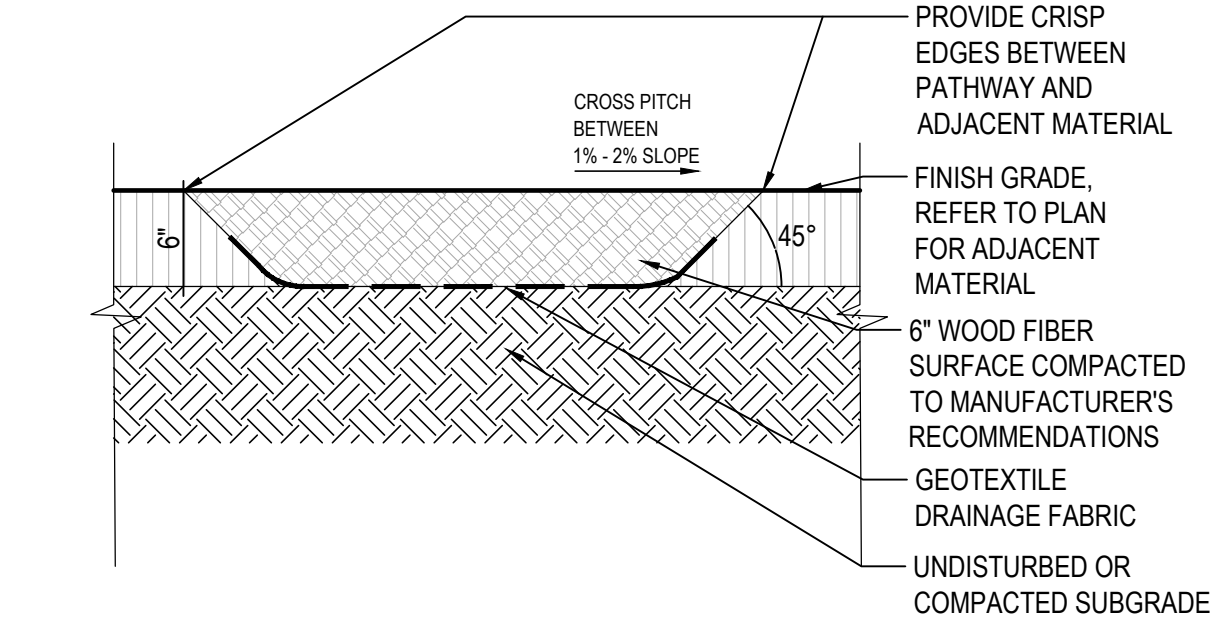
9 OWNER PURCHASED PLAY EQUIPMENT FOOTING
SCALE: 1" = 1'-0"



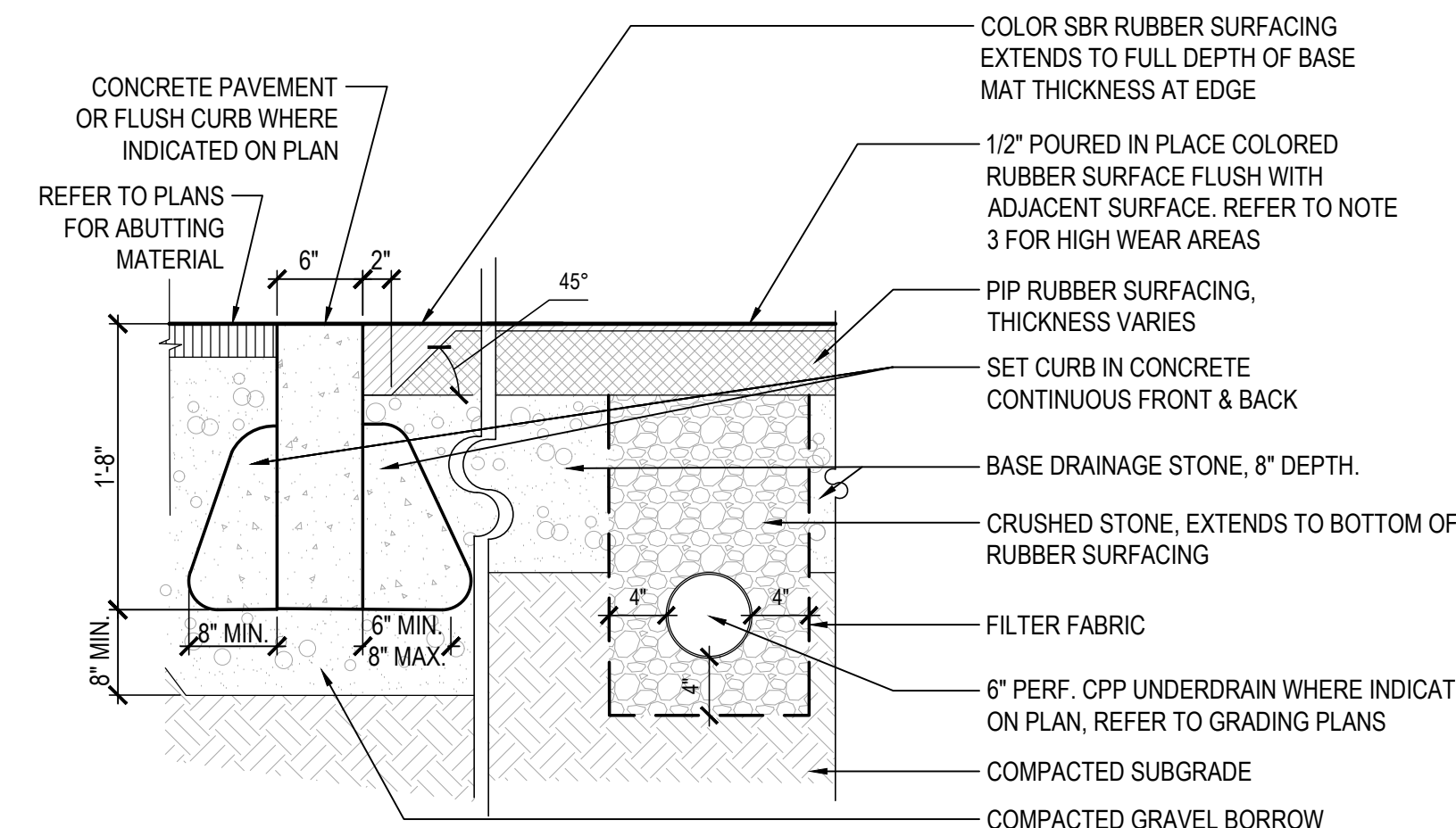
8 CHAIN LINK FENCE FOOTING
SCALE: 1" = 1'-0"



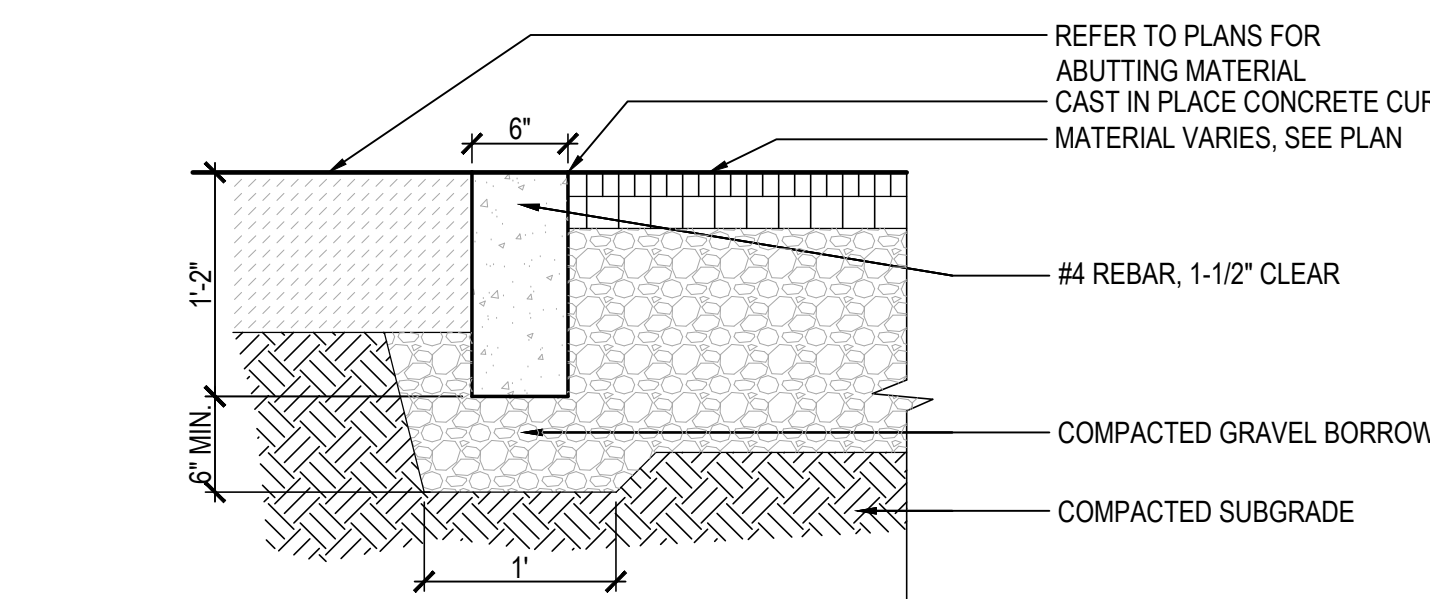
7 CHAIN LINK FENCE
SCALE: 1/2" = 1'-0"



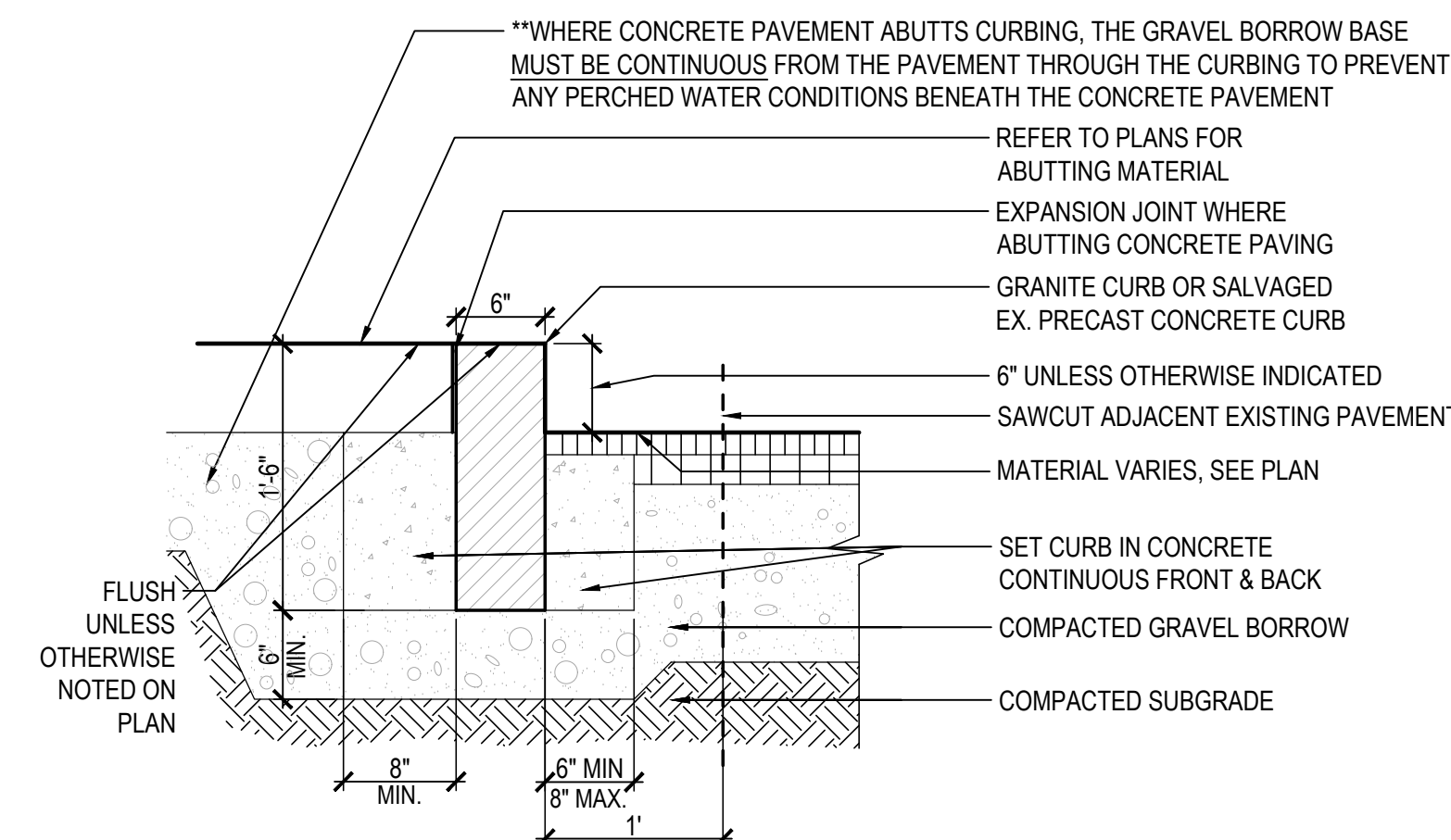
6 ENGINEERED WOOD FIBER
SCALE: 1" = 1'-0"



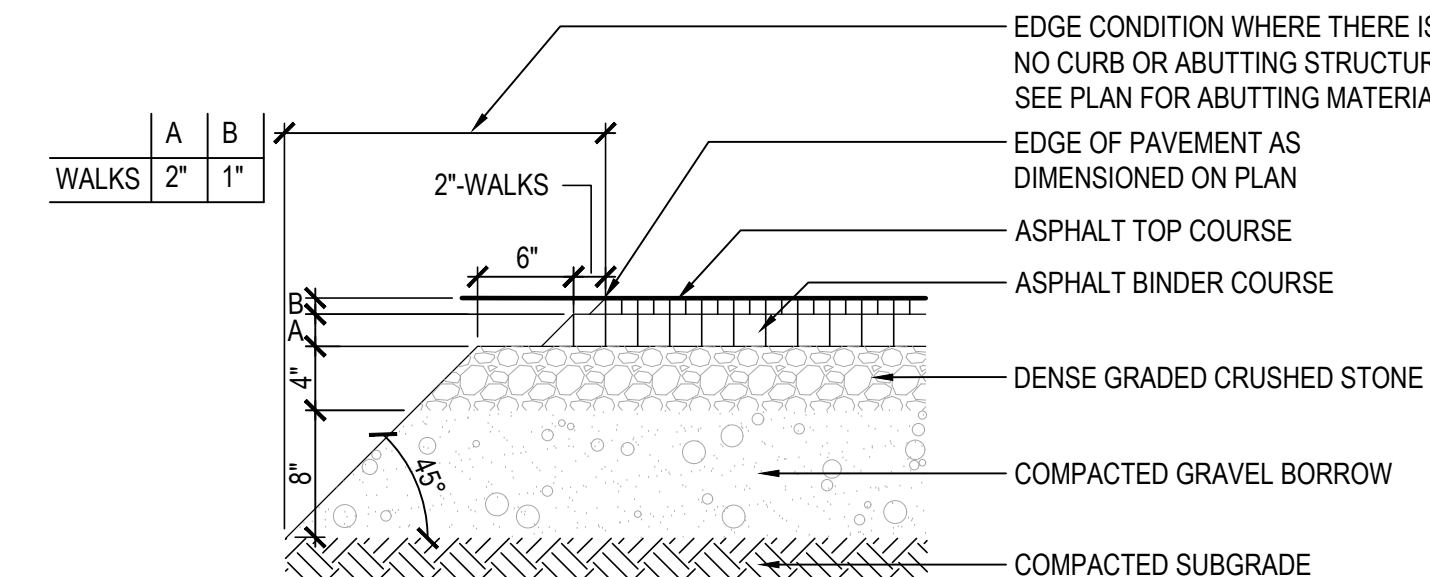
5 P.I.P. RUBBER SURFACING
SCALE: 1" = 1'-0"



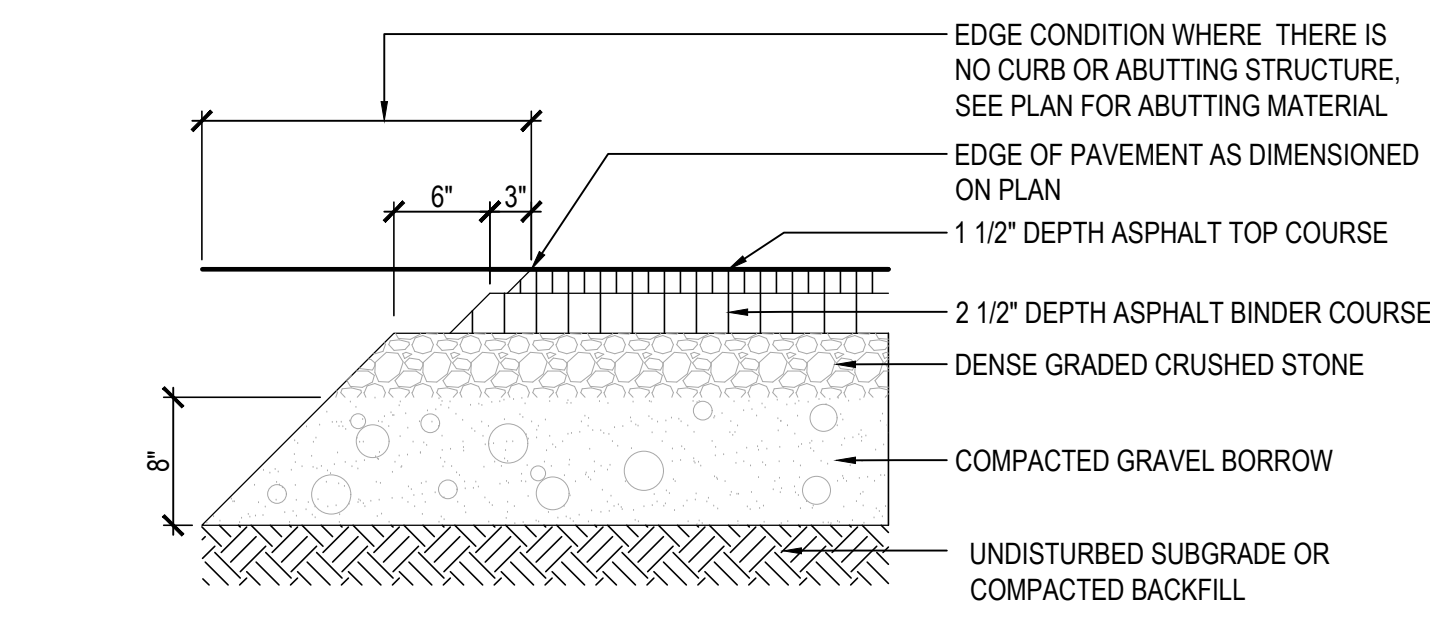
4 FLUSH CONCRETE CURB
SCALE: 1" = 1'-0"



3 VERTICAL GRANITE CURB
SCALE: 1" = 1'-0"



2 ASPHALT WALKWAY PAVING
SCALE: 1" = 1'-0"



1 VEHICULAR ASPHALT PAVING
SCALE: 1" = 1'-0"

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 05-22-2024

SCALE: AS NOTED

JOB #: 22315

DRAWN BY: YL/AA

CHECKED BY: JE/DW

BRACKETT
ELEMENTARY
SCHOOL
PLAYGROUND

66 EASTERN AVE
ARLINGTON
MASSACHUSETTS

PREPARED FOR:
TOWN OF ARLINGTON
PARKS AND OPEN SPACE

BID DOCUMENTS

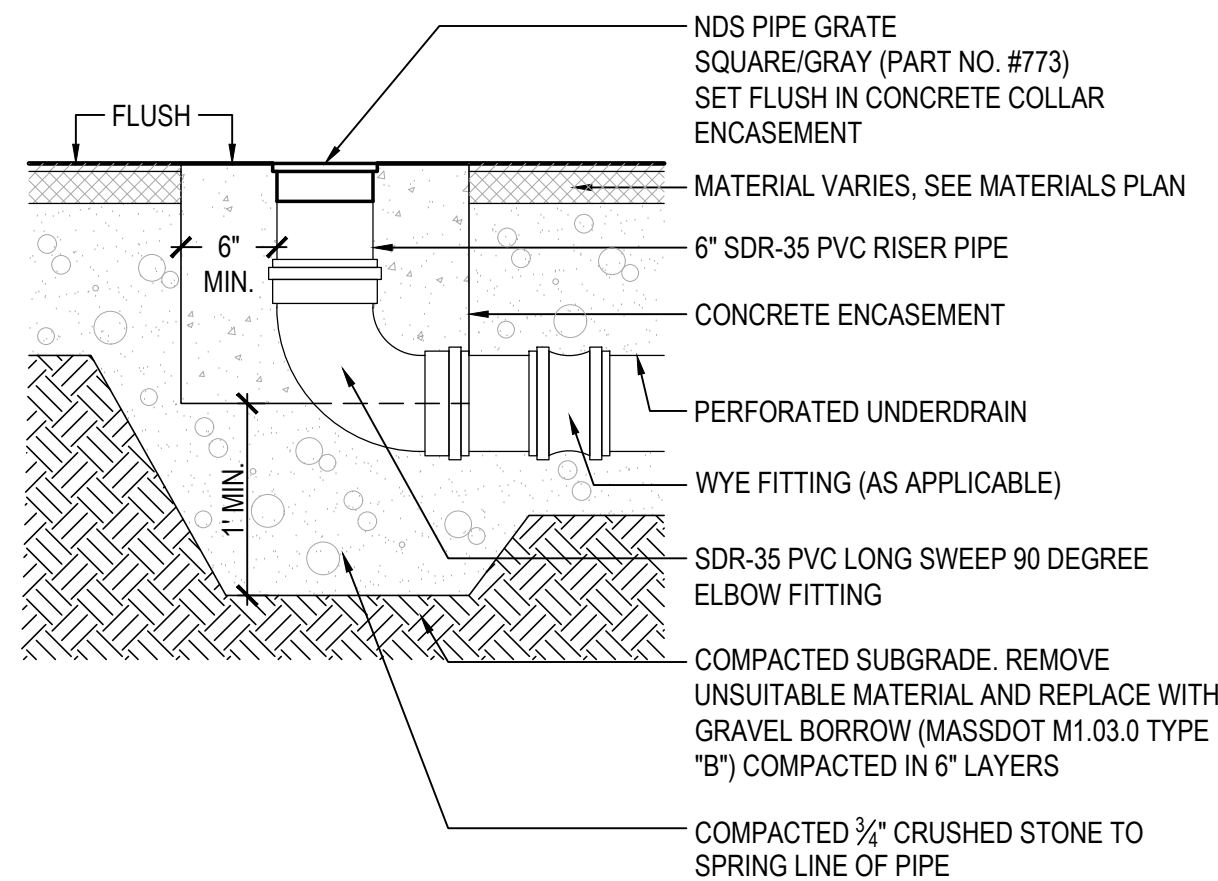
REVISIONS		
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DRAWN BY: YL/AA
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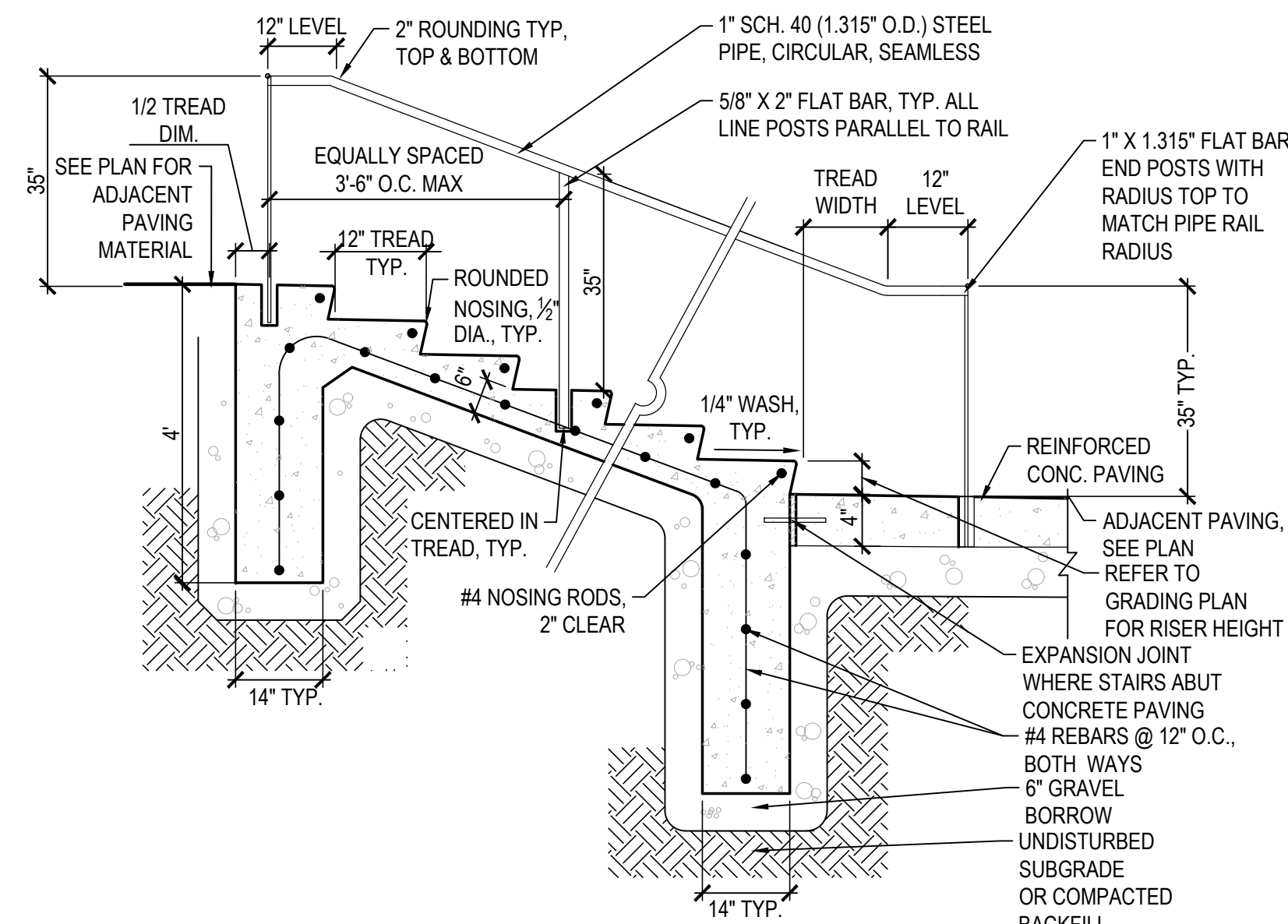
LANDSCAPE
DETAILS - 2

L402



NOTE:
REFER TO THE PAVEMENT SECTION DETAIL FOR
SURFACE MATERIALS AND DIMENSIONS.

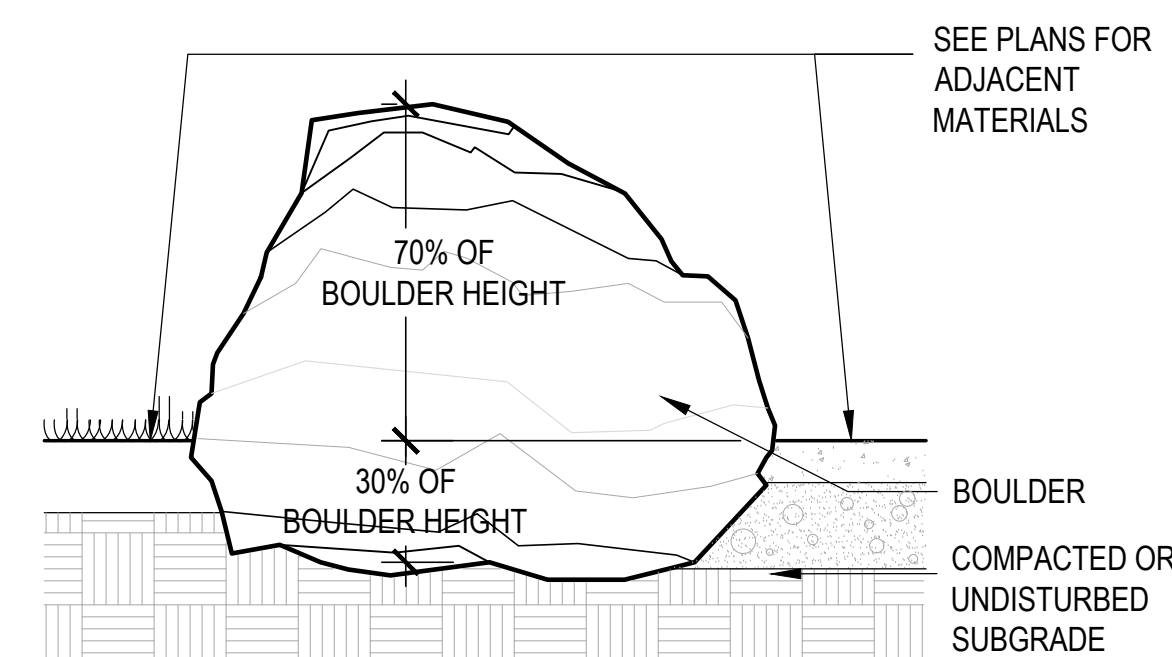
7 CLEAN OUT
SCALE: 1" = 1'-0"



NOTES:

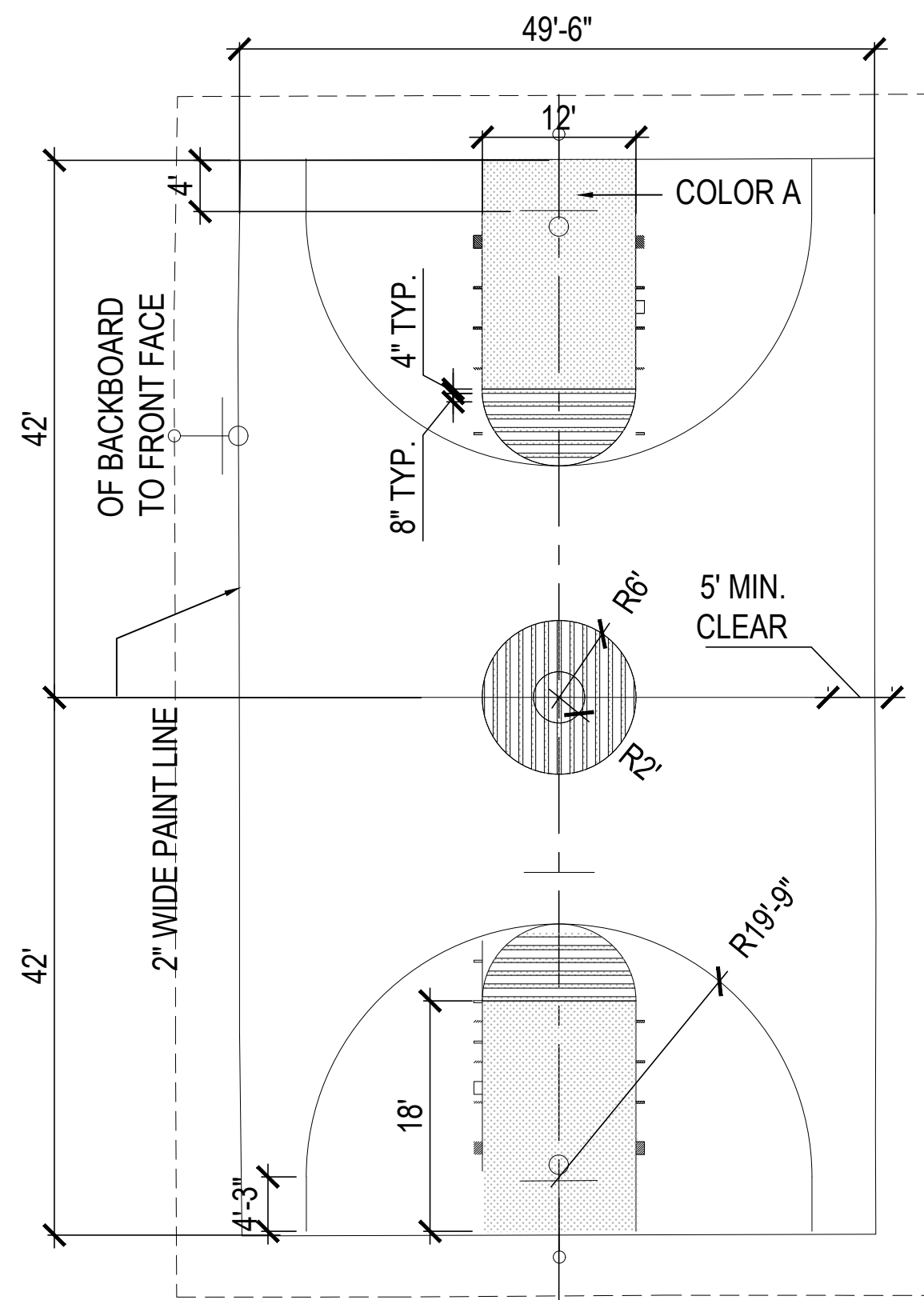
- CONTRACTOR SHALL FIELD MEASURE CONCRETE STAIRS AND SUBMIT LARGE SCALE SHOP DRAWINGS OF HANDRAILS AND ALL NECESSARY HARDWARE PER SPECIFICATION.
- ALL POSTS TO BE SET PLUMB AND VERTICAL. ALL RAILS SHALL FOLLOW GRADE AT BASE.
- ALL HANDRAIL POSTS SHALL BE SET IN THE STAIR TREADS. THE CENTERLINE OF THE POST SHALL BE 4 INCHES FROM THE EDGE OF STAIR.
- HANDRAIL SHALL BE ON BOTH SIDES OF STAIRS EXCEPT AT SPECTATOR SEATING.
- ALL WELDS SHALL BE SMOOTH GROUND TO PROVIDE SEAMLESS CONNECTIONS AND RAILINGS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. REFER TO SPECIFICATIONS FOR FINISH AND COLOR.
- WHERE RAMP RAILINGS ARE SHOWN ON PLAN CONNECTING TO STAIR END POSTS, TOP RAIL SHALL BE CONTINUOUS AND SMOOTH AND THE RAMP BOTTOM RAIL SHALL TERMINATE AT THE STAIR END POST. REFER TO CONCRETE RAMP AND HANDRAIL DETAIL ON THIS SHEET.

6 CONCRETE STAIRS WITH HANDRAILS
SCALE: 1/2" = 1'-0"

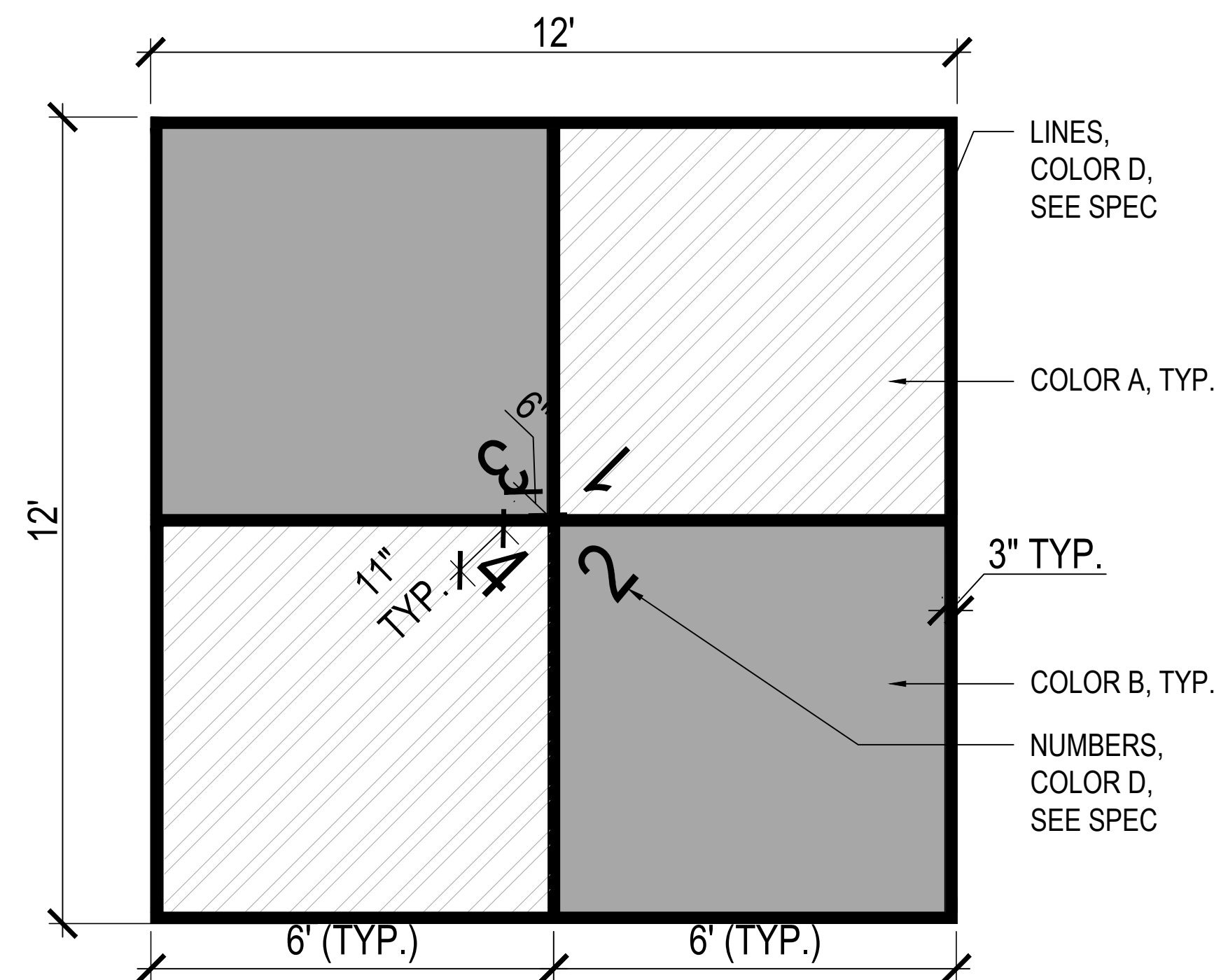


- NOTES:
- BOULDERS TO BE ±27CF, 8CF, 1CF
 - BOULDER SIZES: 3' LENGTH, 2' LENGTH, AND 1' LENGTH
 - LANDSCAPE ARCHITECT TO LOCATE BOULDERS IN FIELD.

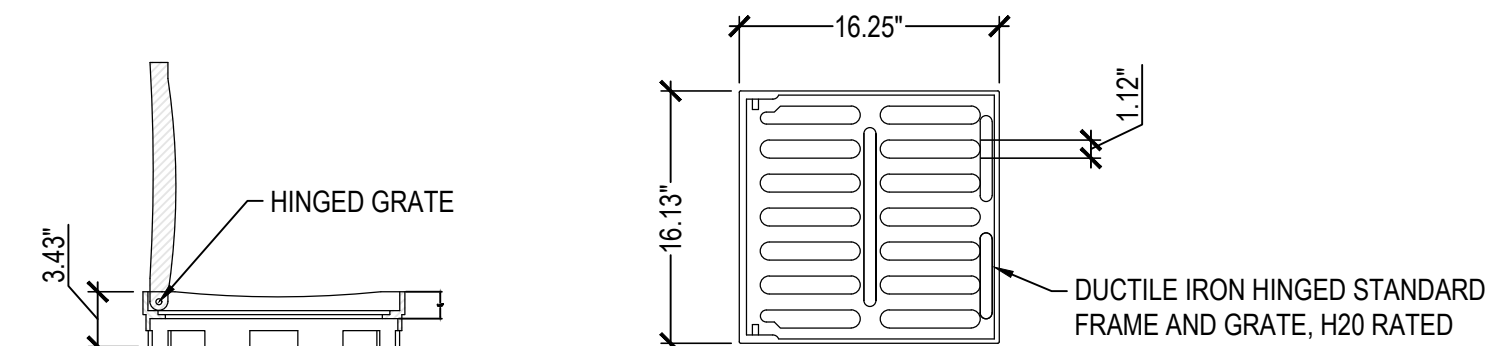
5 BOULDER
SCALE: 1 1/2" = 1'-0"



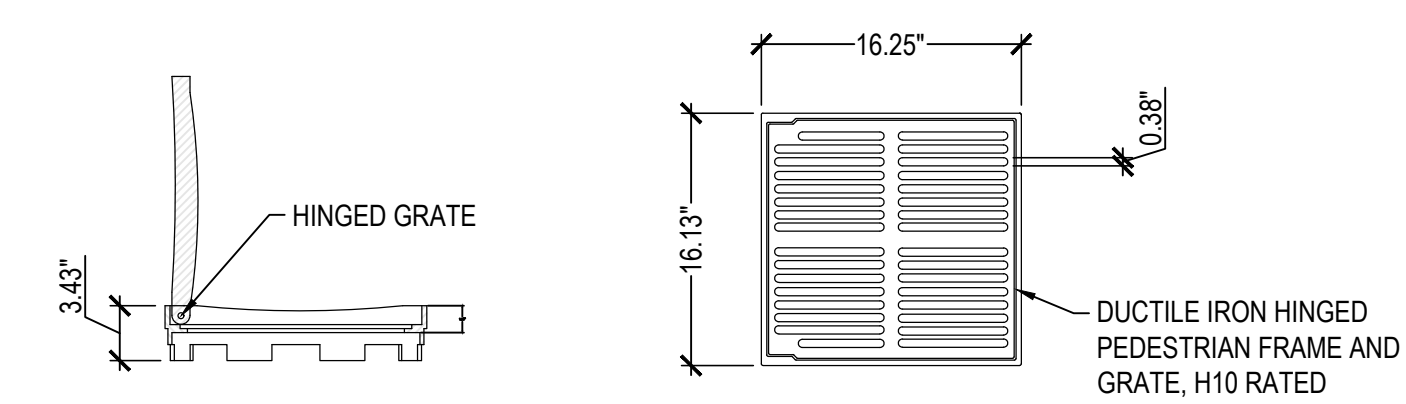
4 BASKETBALL COURT LAYOUT
SCALE: 1" = 1'-0"



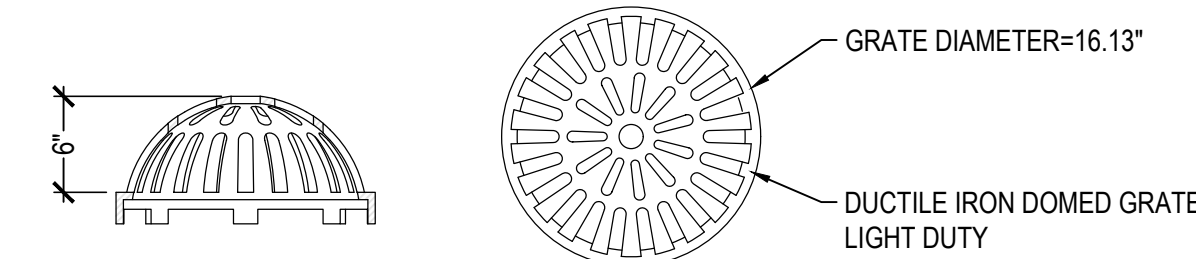
3 FOUR SQUARE
SCALE: 1/2" = 1'-0"



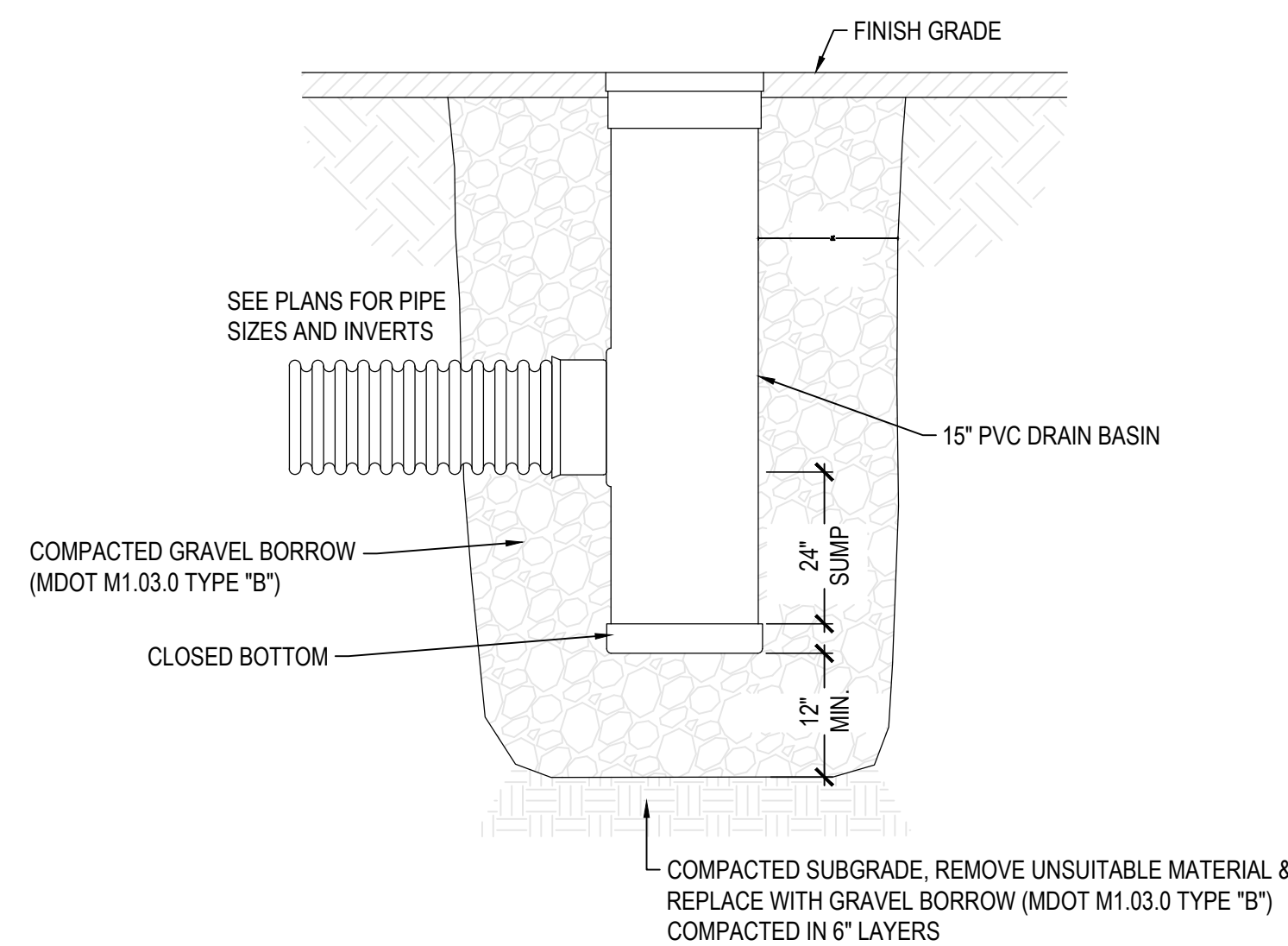
STANDARD GRATE



PEDESTRIAN GRATE (ADA COMPLIANT)



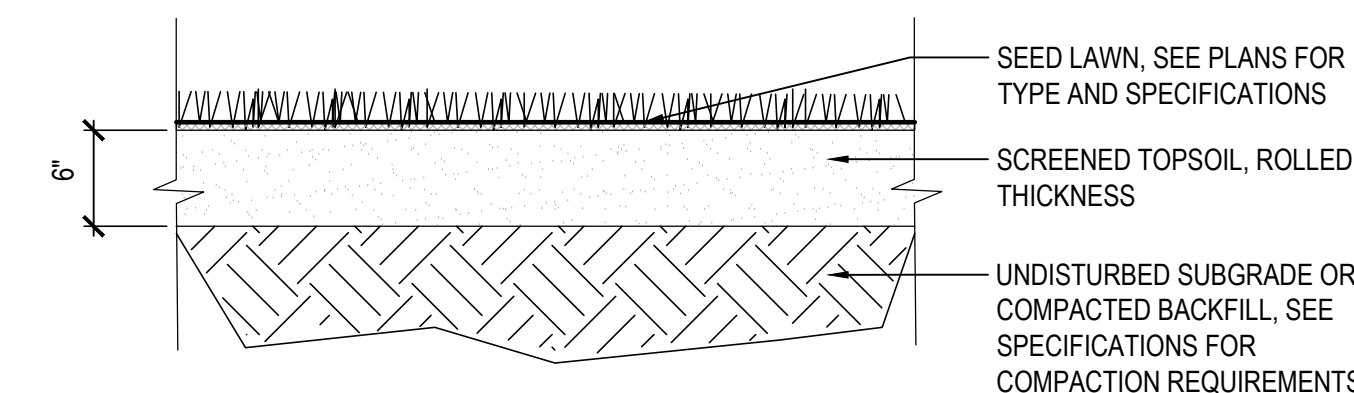
DOMED GRATE



SECTION VIEW

- NOTES:
- FRAME AND GRATE SHALL BE DUCTILE IRON CONFORMING TO ASTM A536 GRADE 70-50-05.
 - 15" AREA DRAINS SHALL BE NYLOPLAST MODEL 2815 AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC., OR APPROVED EQUAL.
 - AREA DRAINS SHALL BE CUSTOM MANUFACTURED ACCORDING TO THE PLANS AND DETAIL.
 - CASTINGS SHALL BE FURNISHED WITH A BLACK PAINT.
 - SEE PLANS FOR LAYOUT AND ELEVATIONS OF DRAIN PIPES TO AREA DRAINS.

2 CATCH BASIN WITH GRATE
SCALE: 1" = 1'-0"



NOTE:
IF SEEDING OPERATIONS ARE COMPLETED TOO LATE IN THE FALL FOR ADEQUATE GERMINATION AND GROWTH OF GRASS, THEN MAINTENANCE SHALL CONTINUE INTO THE FOLLOWING SPRING, OR UNTIL FINAL ACCEPTANCE, AT NO COST TO THE OWNER.

1 SEEDED LAWN
SCALE: 1/2" = 1'-0"